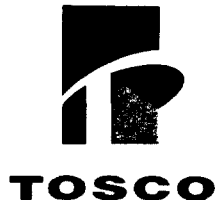


POOR LEGIBILITY

ONE OR MORE PAGES IN THIS DOCUMENT ARE DIFFICULT TO READ
DUE TO THE QUALITY OF THE ORIGINAL



July 24, 1997

Original and 1 Copy - Via Hand Delivery

David Bacharowski
Project Manager
LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD
101 Centre Plaza Drive
Monterey Park, California 91754-2156

2 Copies - Via Overnight Mail

Steven Linder
Project Manager (WST-5)
UNITED STATES ENVIRONMENTAL
PROTECTION AGENCY
75 Hawthorne Street
San Francisco, California 94105

Rey Rodriguez
Utilities Division
CITY OF SANTA MONICA
1212 Fifth Street
Santa Monica, California 90401

Denise Kruger
SOUTHERN CALIFORNIA WATER
COMPANY
P.O. Box 9016
San Dimas, California 91773

**Re: Methyl Tertiary Butyl Ether Pollution Investigation of the
Charnock Sub-Basin
Response to Information Request for Assessment of Potential
Responsible Party Sites (File Number 96-042)
UNOCAL Service Station #4357,
11280 National Boulevard, Los Angeles, California**

VOLUME 7 OF 8

(Exs. 9 (con't) and 10)



MANAGER'S BINDER

LARRY'S UNOCAL

**VEHICLE MAINTENANCE
REPAIR SHOP**

**HAZARDOUS
MATERIALS
TRAINING
PROGRAM**

AUTOMOTIVE SERVICE
EQUIPMENT AND TOOLS

DEALER PRICE LIST
EFFECTIVE MAY 1, 1994

ALL PRICES SUBJECT TO CHANGE WITHOUT
NOTICE. UNOCAL RESERVES THE RIGHT TO
BILL ALL MERCHANDISE AT PRICES IN
EFFECT WHEN MERCHANDISE IS SHIPPED.

INDEX	PAGE
AIR CONDITIONING SERVICE (IG-LO,/RTI/ROBINAIR/SUN/TECHNICAL)...	2-3
BATTERY SERVICE (BEAR/CHRISTIE-UNOCAL/LINCOLN/MIDTRONICS/ SNAP-ON/SUN).....	3-4
BRAKE SERVICE (AMMCO/FMC).....	4-5
COOLING SYSTEM (FUEL POWER).....	6-7
JACKS AND LIFTS (HUNTER/LINCOLN/MILWAUKEE).....	5-6
LUBRICATION EQUIPMENT (BALCRANK/LINCOLN).....	7-8
OIL FILTER CRUSHER (BALCRANK/IMPACTOR/LINCOLN).....	9
PETROLEUM EQUIPMENT (PETROLEUM MKTG. EQUIPMENT).....	8-9
SERVICE STATION EQUIPMENT & SUPPLIES (GPF).....	28
TIRE CHANGERS (COATS/FMC).....	9-10
TUNE-UP SERVICE (ALLDATA/ALLEN/BEAR/CAS/MITCHELL/SNAP-ON/SUN) ..	10-19
WHEEL ALIGNMENT SERVICE (AMMCO/BEAR/BRANICK/FMC/HUNTER).....	20-28
WHEEL BALANCERS (BEAR/COATS/SNAP-ON).....	29

AIR CONDITIONING SERVICE

SERIES	ITEM NO.	DESCRIPTION	DEALER PRICE EACH
BEAR			
936	40375	R-12 REFRIGERANT RECOVERY, RECYCLING AND RECHARGING SYSTEM.....	\$4,595.00
936	40380	R134A REFRIGERANT RECOVERY, RECYCLING AND RECHARGING SYSTEM.....	\$4,995.00
936	43278	AUTOMOTIVE MULTIMETER.....	\$330.00
IG-LO			
955	1500	R-12 RECLAMATION AND RECHARGING SYSTEM.....	\$3,625.00
955	2500	R-12 RECLAMATION AND RECHARGING SYSTEM.....	\$4,369.00
RTI			
937	RRC750	R-12 REFRIGERANT RECOVERY, RECLAIM AND CHARGING STATION.....	\$2,886.00
937	RRC751V	R-12 REFRIGERANT RECOVERY AND RECLAIM STATION.....	\$3,291.00
937	RRC760	R-134A REFRIGERANT RECOVERY, RECLAIM AND CHARGING STATION.....	\$3,014.00
937	RRC760V	R-134A REFRIGERANT RECOVERY, RECLAIM AND CHARGING STATION.....	\$3,419.00
937	TX600	R-12 REFRIGERANT RECOVERY, RECLAIM AND CHARGING STATION.....	\$1,539.00
937	TC700	R-12 REFRIGERANT RECOVERY, RECLAIM AND CHARGING STATION.....	\$2,475.00
937	TX600/ R134A	R134A REFRIGERANT RECOVERY, RECLAIM AND CHARGING STATION.....	\$1,666.00
937	TC700/ R134A	R134A REFRIGERANT RECOVERY, RECLAIM AND CHARGING STATION.....	\$2,604.00
SUN			
970	MRC450	DELUXE MOBILE RECYCLING CENTER 134A.....	\$6,000.00
970	MRC400	DELUXE MOBILE RECYCLING CENTER R-12.....	\$5,621.00
970	MRC312	MOBILE RECYCLING CENTER R-12.....	\$3,937.00
970	MRC334	MOBILE RECYCLING CENTER 134A.....	\$4,125.00
970	109501781	FILTER KIT (1 MASTER AND 10 DESICCANT PKS. R-12).....	\$75.00
970	109501783	FILTER KIT (1 MASTER AND 10 DESICCANT PKS. 134A).....	\$75.00
970	700923311	ADDITIONAL 30 LB. STORAGE TANK.....	\$248.00
970	109102291	ADDITIONAL 50 LB. STORAGE TANK.....	\$277.00
TECHNICAL CHEMICAL			
912	SR9000M	RECOVERY, RECYCLING AND FLUSH SYSTEM FOR R-12, INCLUDES S12445 BASIC FLUSH KIT AND S12458 UNIVERSAL ADAPTOR KIT.....	\$2,709.00
912	SR9000MA	RECOVERY, RECYCLING AND FLUSH SYSTEM FOR R-12, R-22, R-500, R-502. INCLUDES S12445 BASIC FLUSH KIT AND S12458 UNIVERSAL ADAPTOR KIT.....	\$2,852.00

MANAGER'S BINDER

TABLE OF CONTENTS

INTRODUCTION	1
Program Content	2
ADMINISTERING THE HAZARDOUS MATERIALS PROGRAM	
Getting Started	3
Training Tips	4
WALL CHARTS	5
UNDERSTANDING THE HAZARD COMMUNICATION REGULATIONS	
The Five Requirements of "Right to Know"	8
OSHA Enforcement	9
Written Hazard Communication Plan	10
The Inventory	11
Material Safety Data Sheets	12
Container Labeling	14
Employee Training	15
Documentation	16
SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES	
Introduction	17
Identifying Hazardous Waste	18
Waste Classification and Treatment Standards	19
Determining Generator Status	20
On-Site Waste Management	21
Selecting Transporter and Waste Management Facility	23
Manifests and Transportation	24
Notification and Record Keeping	25
Limiting Your Waste Handling Liability	26
EMPLOYEE TRAINING MODULES INTRODUCTION	28
Employee Training Sign-In Sheets	
The Employee's "Right to Know"	
Product Labels and Materials Safety Data Sheets	
Handling of Hazardous Materials	
Vehicle Repair Shop Hazards	
Clean-Up of Spills and Disposal	
Exposure and First Aid Procedures	
Fire and Explosion	
Storage and Mixing of Hazardous Materials	
ANSWERS TO REVIEW EXERCISES	
APPENDIX	
OSHA Consultation and State Waste Management Agency Numbers	
EPA Regional Offices	

NOTICE

The information presented here is based on current Occupational Safety and Health Administration (OSHA) and Environmental Protection Agency (EPA) regulations. These regulations are subject to change and may become obsolete if new laws are enacted. In addition, they are subject to interpretation as they are enforced which may result in changes to the information as presented.

As an employer, you can be held liable for injuries caused by hazardous working conditions if you knew, or within the regular scope of your duties should have known, of the existence of violations of the regulations controlling the handling of hazardous materials. It is therefore essential that you familiarize yourself not only with OSHA requirements but local or state worker safety laws and also with federal, state and local laws and regulations governing the disposal of hazardous waste.

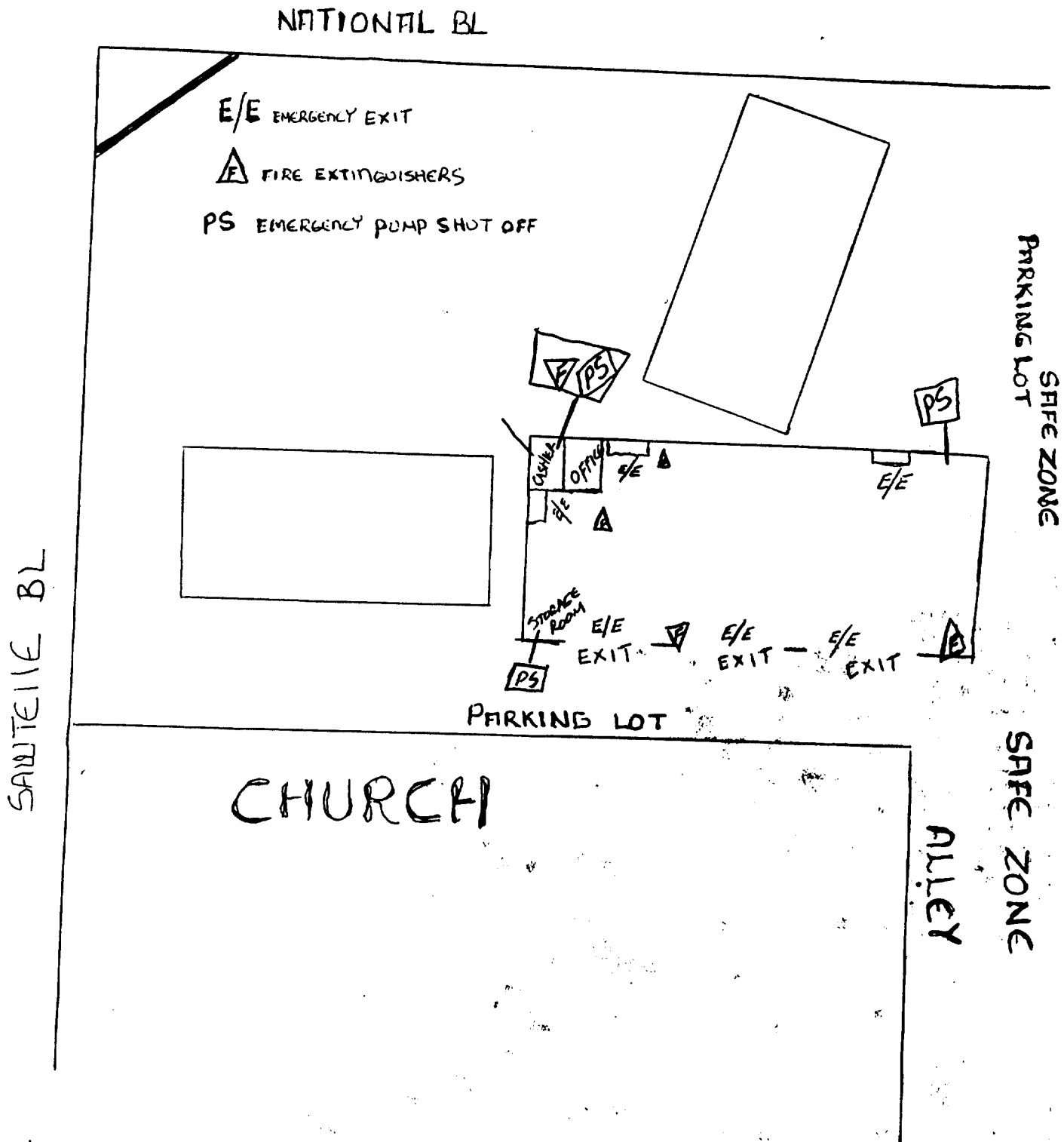
Although all of the information contained in this publication has been obtained from sources generally believed to be reliable, American Hazmat, Amboy Associates and Safety-Kleen Corporation make no warranties or guarantees, express, oral, implied or statutory regarding this product, and expressly disclaim all implied warranties or warranties otherwise arising by operation of law, including the implied warranties of merchantability and fitness for a particular purpose. The Publishers and Safety-Kleen Corporation neither assume nor authorize any party to assume on Publishers' or Safety-Kleen Corporation's behalf any liability for results obtained by any uses of this product. The Purchaser assumes all risk and liability for results obtained by any use of this product. American Hazmat, Amboy Associates and Safety-Kleen's liability shall not exceed the purchase price for this product. In no event shall American Hazmat, Amboy Associates or Safety-Kleen Corporation, their agents or employees be liable to the Purchaser or any third party for injury or damage to any person or property whatsoever as a result of this product, nor be liable for loss of profits, loss of use or any incidental, consequential, indirect, contingent, secondary, special or other damages or expenses of any nature whatsoever, even if advised of the possibility of such damages. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

© Copyright 1991 by Amboy Associates all rights reserved.
San Diego, California (619) 575-4120

All rights reserved. No part of this publication except copies of the Employee Training Sign-Up Sheets may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopy, recording, or any information storage and retrieval system, without permission in writing from the Publisher.

Printed on recycled paper.

IN CASE OF FIRE EMERGENCY EVACUATION PLAN



IN CASE OF PERSONAL INJURY MEDICAL FACILITIES THAT WILL BE USED:

CITIZEN MEDICAL GROUP
11560 W PICO BL
LA. CA 90064
310 477-2705

Safety-Kleen's Hazardous Materials Program will help you and your employees learn how to deal safely with the hazardous materials in your shop, including:

- Degreasers and Corrosives
- Lubricating Fluids
- Hydraulic and Cooling Fluids
- Compressed Gases
- Solvents, Removers and Cleaners
- Adhesives and Epoxies
- Fuels
- Paint Products

INTRODUCTION

This program has been designed to be applicable to the entire vehicle maintenance industry including automobile and truck maintenance, vehicle fleets, service stations and automotive dealers, farm equipment, bus lines, mining, manufacturing and government vehicles and air transport machinery to name only a few. The specific hazardous materials and operations unique to the vehicle maintenance industry are the basis of this program.

Why do you and your employees need hazardous material training?

In addition to the benefits of complying with OSHA and EPA laws, studies show that most job-related accidents are caused by unsafe practices of people, not unsafe conditions. If you think about it, even unsafe conditions are caused by people who have not been properly informed. It only takes one serious fire, or the death or disability of one employee to force you to close your business. You don't have to turn your business upside down to prevent accidents and losses from happening. You need an organized approach and a good employee training program to make everyone in your workplace aware of safety.

Upon implementation of this program you will have an understanding of your obligations to your employees and to government agencies regarding hazardous materials. You and your employees will know how to handle and dispose of hazardous materials safely and you will have documentation that shows your "good faith" in complying with OSHA's Hazard Communication Regulation and the EPA's hazardous waste laws.

The benefits this program offers you and your business are substantial. Employer and employee knowledge of hazardous materials and how to deal with them will reduce work-related accidents, control insurance premiums and reduce inventory costs. The possibility of government and employee lawsuits against you and your business will be reduced. You can be assured that the hazardous materials your business uses are being handled correctly and disposed of properly.

We at Safety-Kleen have a strong regard for environmental protection and product safety. We conduct our activities in such a manner to protect our customers, their employees and the general public. This program is the result of our goal to help our customers comply with hazardous materials regulations and it is essential to you and your employees.

Program Content

Your Hazardous Materials Program contains two binders, three colorful wall charts and a package of five employee training manuals.

The Manager's Binder Contains:

- A section that explains how to administer the program.
- A section that explains the charts included in the package.
- Two sections that explain the Hazard Communication Standard and introduce hazardous waste management concepts.
- A copy of the employee training modules, training session sign-up sheets and answers to review exercises.
- An appendix that lists resources if you have questions regarding OSHA or EPA regulations.

The Material Safety Data Sheet Binder Contains:

- An introduction to the contents and use of the MSDS Binder.
- A fill-in-the-blanks Hazard Communication Plan.
- Instructions for compiling your inventory of hazardous materials.
- An indexing system for filing Material Safety Data Sheets.
- An MSDS Glossary showing definitions of many of the terms that appear on product MSDSs.

Inventory Roster

This chart provides a way to list the primary hazardous materials used in each work area.

How to Use a Material Safety Data Sheet Chart

This chart explains in simple terms what information is included on each MSDS.

Hazardous Materials Reference Chart

This chart explains the hazards and handling of types of hazardous materials found in a vehicle maintenance facility.

Employee Training Manuals are organized into modules.

Each module has a corresponding review exercise and sign-off for documentation of training.

Modules address the following areas:

- The Employee's "Right to Know"
- Product Labels and MSDSs
- Handling of Hazardous Materials
- Vehicle Repair Shop Hazards
- Clean Up of Spills and Disposal
- Exposure and First Aid Procedures
- Fire and Explosion
- Storage and Mixing of Hazardous Materials

INTRODUCTION

(Continued)

PROGRAM CONTENT

Successfully implementing the Hazardous Materials Program depends on you, the shop manager. Careful preparation is the key and is really very simple. Familiarize yourself with the information and materials we have supplied. Then you will be able to explain the material effectively and answer any questions your employees may have.

ADMINISTERING THE HAZARDOUS MATERIALS PROGRAM

GETTING STARTED

- ☐ 1. Start by reading the remaining information in this binder including the explanation of the Hazard Communication and EPA waste management regulations. These will help you understand your legal obligations to your employees and government agencies regarding hazardous materials.
- ☐ 2. Follow the instructions in the front of the MSDS Binder to complete the written Hazard Communication Plan. You will need to decide who is going to be responsible for various phases of the program and where you will keep the plan, MSDSs and other information.
- ☐ 3. Make a list (inventory) of all of your hazardous materials. Make a copy available to employees.
- ☐ 4. Get MSDSs for all listed materials.
 - ☐ Collect MSDSs now in-house and match to your inventory.
 - ☐ Call your distributor for missing MSDSs and write for MSDSs if necessary.
 - ☐ Read as many of the product MSDSs as possible to become more familiar with the hazards, symptoms and protective measures required. Verify that you are providing the correct protective equipment and instruction to your employees now.
 - ☐ File MSDSs in the binder where employees can use them.
- ☐ 5. Identify and label all secondary containers.
- ☐ 6. Prepare for Employee Training.
 - ☐ Read through the employee training material and be sure you are familiar with the contents of each module. Fill out the review exercises yourself and check the answers to make sure you understand the meaning of each question.
 - ☐ Familiarize yourself with the wall charts and fill in the necessary information where required. Decide where you will hang the charts.
 - ☐ Schedule a time and place.
 - ☐ Complete the training sign-up form.
- ☐ 7. Conduct the training and collect, review, check and sign the review exercises.
- ☐ 8. File sign-up sheets and review exercises.
- ☐ 9. Train new employees as required. Routinely update your inventory, MSDSs, labels and plan.

Training Tips

The OSHA Hazard Communication Standard does not specify the length of training or how and when it should be conducted. The general rule is that employees should be trained in the use of each material **before** they use it and should **always** know how to get more information from MSDSs and labels. Some states mandate annual training. We do offer some suggestions below for conducting a successful program:

1. Start each session early in the day while your employees are still fresh and energetic. Training is less effective later in the day when workers are tired.
2. Keep the session short, simple and to the point. Take about ten minutes to discuss each training module. The program will be more effective if you discuss no more than two to three modules in one training session. Cover one or two categories of related hazardous materials and discuss the specific MSDSs at each session.
3. Keep the setting informal by conducting the training in the lunchroom or break area of your facility.
4. Complete a sign-up sheet before each training session. Each sheet notes the topic discussed and those present at each session. This lets the EPA, OSHA and any other agency know you have conducted the training.
5. Be ready for questions and review. Before you conduct the employee training, make sure you understand the content of each module so you can answer questions. Be prepared to say "I don't know, but I will find out" in answer to some of the questions. There is nothing wrong with not having all of the answers. If, for example, it is a question about a specific material, ask your distributor to help you find the answer. Do get back to the employee with the answer.

Training time is good for morale and brings your employee team together. People like training when it is done in a spirit of goodwill.

ADMINISTERING THE HAZARDOUS MATERIALS PROGRAM

(Continued)

TRAINING TIPS

As part of your Hazardous Materials Program package, you have received three large wall charts to be posted in your facility.

- "How to Use a Material Safety Data Sheet"
- Hazardous Materials Inventory Roster
- Hazardous Materials Reference Chart


Remember to post each chart where all of your employees can easily see it. Make sure your employees understand how to use each chart and the information on it.

"How to Use a Material Safety Data Sheet"


This chart describes the basic information that is found on the product MSDS. It includes a simple caption for each section of the MSDS. Displaying this chart near where you keep your MSDS Binder will allow your employees to quickly understand how to read and use a Material Safety Data Sheet.

WALL CHARTS

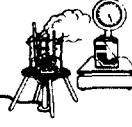
HOW TO USE A MATERIAL SAFETY DATA SHEET




CHEMICAL IDENTIFICATION:
This is usually the first section. It lists the chemical name and any trade name. It also lists the manufacturer's name, address, and emergency phone number.




HAZARDOUS INGREDIENTS:
This tells you what's in a chemical that can harm you. It gives you the permissible exposure limit (PEL) or the threshold limit value (TLV).



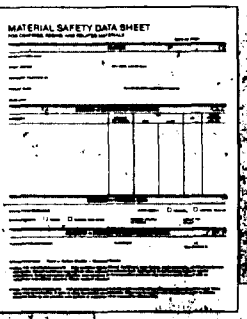
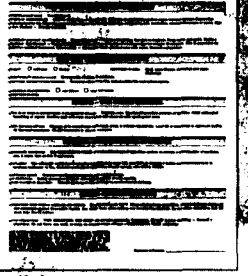
PHYSICAL DATA:
This describes what the material looks like, smells like, how fast it evaporates, and whether the vapors (fumes) rise or fall in the air.




FIRE AND EXPLOSION DATA:
This tells you at what temperature the material will catch fire or explode. It describes the type of extinguisher and protective equipment to wear if a fire starts.




HEALTH HAZARDS:
This tells how you might feel if you come into contact with a hazardous material, such as a skin rash, headache, or dizziness. It also tells you what to do in case of emergency and what kind of test and to use.


REACTIVITY DATA:
This tells you if the material reacts with other materials or conditions. It lists materials that, when mixed together, will burn or explode. It also tells you about certain conditions like heat or sunlight that may make a chemical unstable, and cause a dangerous reaction, such as fire or explosion.




SPILL OR LEAK PROCEDURES:
This tells you what to use to clean up a spill or a leak. It lists the protective equipment to use to protect yourself from the hazardous material you are cleaning up.



SPECIAL PROTECTION:
This lists the personal protective equipment needed to handle the material safely, such as goggles, a specific type of respirator, rubber gloves, or full coveralls to protect your entire body from exposure to a material.




SPECIAL PRECAUTIONS:
This tells you any other special instructions to follow when handling the material and gives you information not covered in other parts of the MSDS.



If you have any questions after reading an MSDS, ask your shop manager.

DON'T BE AFRAID TO ASK QUESTIONS
Keep asking until you understand. What you learn could save a life. Maybe your life.



This chart will be your first step to making your employees aware of the materials that present dangers to them on the job. Follow the instructions in the MSDS Binder to complete your inventory. Then list your primary hazardous materials on this chart with a grease-type pencil or erasable marker. Add the area where the material is used and whether or not you have a current MSDS on hand for it.

WALL CHARTS

(Continued)

© Copyright 1991 Amboy Associates (SKMR118)

Hazardous Materials Reference Chart

This chart was designed as a quick reference on how to handle the different hazardous materials used. The chart is not a substitute for reading Materials Safety Data Sheets. However by finding the material you are using in the left hand column and the circumstances you are experiencing in the top row, you and your employees can determine the type of action to take by reading the information contained in the intersecting square.

This chart provides information in an emergency and is an excellent learning source for teaching your employees the general characteristics of categories of materials.

WALL CHARTS

(Continued)

HAZARDOUS MATERIAL REFERENCE CHART													
HAZARD STATEMENT	SPECIAL CONTENT INFORMATION	HANDLING INSTRUCTIONS SPECIAL EQUIPMENT				FIRST AID PROCEDURES							
		SAFETY EYEWEAR	RESPIRATORY	SKIN	EXPOSURE SYMPTOMS	EYE CONTACT	SKIN CONTACT	INHALATION	SWALLOWING	SPILL CLEAN UP	FIRE FIGHTING PROCEDURES	STORAGE & TRANSFER IT	DISPOSAL
DEGREASERS & CORROSIVES	Flammable Extremely Flammable	Includes: Caustics Carb Cleaner Battery Acid	Required	Recommended	Gloves & Impervious Clothing Recommended	• Headache • Dizziness • Confusion • Unconsciousness • Staggering	Wash With Water If Severe — See a Doctor			For Flammables	Extinguisher: Class "B" Foam — Carbon Dioxide — Chemical Powder —	Transfer & Mixing Small Amounts Only Always Use Static Lines	Consult Your Safety Data Sheet Instructions
LUBRICATING FLUIDS	Low Flammability	Includes: Engine Oil Trans Oil HD Greases	Recommended		Gloves Recommended to Prevent Contact	• Skin Irritation	Wash Affected Area with Clean Water and Soap	Move to Fresh Air		Remove Ignition Sources			
HYDRAULIC / COOLING FLUIDS	Low Flammability	Includes: Brake ATF P/S Fluid Antifreeze	Recommended		Gloves Recommended to Prevent Contact	• Skin Irritation	Wash Affected Area with Clean Water and Soap	Do Not Injure Vomiting		Avoid Breathing Fumes			
SOLVENTS / REMOVERS / CLEANERS	Flammable Extremely Flammable		Required	Recommended	Gloves & Impervious Clothing Recommended	• Headache • Dizziness • Confusion • Unconsciousness • Staggering	Wash With Water If Severe — See a Doctor	Restore Breathing			Wear Full Protective Equipment Including Respirator	Storage Store All Flammables Below 120° F — in Building and/or Metal Cabinet Designed for Flammables	Follow Local, State, & Federal Regulations
COMPRESSED GASES	Flammable	Includes: Freon Acetylene Oxygen	Required		Gloves & Special Clothing Recommended	• Headache • Dizziness • Confusion • Unconsciousness • Staggering	Wash Affected Area with Clean Water and Soap	Keep Warm & Quiet		Use Inert Absorbent			
ADHESIVES / EPOXIES	Flammable		Recommended	Recommended	Gloves Required	• Headache • Dizziness • Confusion • Unconsciousness • Staggering	Wash Affected Area with Clean Water and Soap	Consult a Doctor	Consult a Doctor	Non Soaking loos			
FUELS	Extremely Flammable	Includes: Leaded & Unleaded Gasolines	Required	Recommended	Gloves Recommended to Prevent Contact	• Headache • Dizziness • Confusion • Unconsciousness • Staggering	Wash Affected Area with Clean Water and Soap			To Remove	Fog Nozzles Recommended If Water Is Used		Do Not Incinerate in Closed Containers
PAINT PRODUCTS	Flammable Extremely Flammable	Enamels May Contain Lead	Recommended	Recommended	Gloves Recommended to Prevent Contact	• Dizziness • Confusion • Unconsciousness • Staggering	Wash Affected Area with Clean Water and Soap						
Emergency Phone Numbers: Fire & Paramedics Hospital - Emergency Poison Control Center Waste Service Center MSDS are Located:													

In the fall of 1987, the Occupational Safety and Health Administration (OSHA) extended the Hazard Communication Standard, or "Right to Know" regulations, to businesses and operations of all sizes in the United States. If you have hazardous materials in any quantity, and any number of employees or contractors, these regulations apply to you. Unlike many other regulations, there are no minimums for the number of employees you have or the amount of hazardous materials present in the workplace.

In short, the law says that your employees have a "Right to Know" about any hazardous materials to which they are exposed and how to protect themselves from them. There are several specific actions you must take to ensure that they know.

- First, you must have a written plan ("Hazard Communication Plan") which describes what you are going to do to fulfill the requirements of the law and assigns specific responsibility for carrying it out.
- Second, you must identify and inventory your hazardous materials, and continually update that inventory.
- Third, you must have a current Material Safety Data Sheet for each hazardous material.
- Fourth, you must label secondary containers.
- Fifth, you must train employees.

Aside from the benefits of simply complying with the law, "Right to Know" programs can benefit your operations in other ways. Proper use of materials and an awareness of the safety issues can reduce accidents, and with them, the costs of wasted materials, disposal, lost production time, and, in some cases, insurance rates. Your awareness of the materials being selected and used may help in inventory control and better selection of less hazardous materials. The points of a well-run "Right to Know" program are, in many cases, nothing more than good management of your business.

UNDERSTANDING THE HAZARD COMMUNICATION REGULATION

THE FIVE REQUIREMENTS OF "RIGHT TO KNOW"

OSHA Enforcement

OSHA "Right to Know" is enforced by either the federal or state government, depending on the state you are in. You need not be a large and highly visible employer to be inspected. Over 90% of inspections of small businesses are triggered by employee or neighbor complaints.

More and more, inspectors are looking not only for the "form" of the program, but for how effective it is. They will check to be sure that information is current. Most important, they will determine whether employees actually understand both their rights and the hazards in the workplace. If you have questions about OSHA "Right to Know," you may contact OSHA, an OSHA consultation service (see Appendix), your county health department or your insurance company.

Normally, the inspector comes to your business unannounced and starts by asking to see your written plan. The inspector may then ask to see employee training records and your inventory. Do not refuse to show the relevant records or answer questions.

The inspector may then walk up to employees and question them directly regarding the materials they are using, on what they would do in the event of a spill, fire or emergency. It is expected that the employee can immediately show the inspector where MSDSs and the written plan are kept, and be able to produce a specific MSDS as requested by the inspector. The inspector may then ask the employee to name the person responsible for labeling containers or ensuring that MSDSs are up to date. A check for container labels and MSDSs will be made. You should accompany the inspector throughout the entire visit.

Citations, if any, will be in writing and will be sent by mail after the inspector's visit. If you are not in compliance, you may be given a 30 day period to comply, or you may be cited and fined immediately. Be sure you fully understand exactly what the inspector is asking you to do.

The best approach is to have your written plan, records of training and inventory in a readily accessible place. Make sure your MSDSs are up-to-date, and label your secondary containers. The more you can show that you have in place, the better the results of the inspection.

UNDERSTANDING THE HAZARD COMMUNICATION REGULATION

(Continued)

OSHA ENFORCEMENT

Written Hazard Communication Plan

You are required to have a written Hazard Communication Plan. You may either write your own or fill in the blanks on the plan provided in the MSDS Binder. For special situations, you may want to add additional information on your procedures.

The plan explains your commitment to "Right to Know," describes your policies and procedures and names the people responsible for implementing the plan. Specifically, it:

- Describes how you identify hazardous materials.
- Names the person(s) responsible for labels and warning signs, for making sure that MSDSs are up-to-date, for training and for notifying contractors about hazards.
- Describes the type of secondary container labeling system you use as well as other warning signs.
- Explains where MSDSs will be kept, how they will be maintained and updated and how you will get them if they do not accompany the product shipment.
- Describes your training program (who, what, when, where). Explain when new employees will be trained, and when all affected employees will be trained in the use of new chemicals or in the non-routine use of familiar chemicals.
- Keeps the information in a central location, accessible to employees. They not only need to know where it is and who is responsible for implementing it, they have a "Right to Know."

The plan should be updated any time you change personnel assignments, or processes or materials. When the inspector compares your plan to your operations on the day of the visit, there should be no variances.

UNDERSTANDING THE HAZARD COMMUNICATION REGULATION

(Continued)

WRITTEN HAZARD COMMUNICATION PLAN

The Inventory

In preparing the hazardous materials inventory, you may be surprised at the number of hazardous materials you have and use. Many materials you have used for years without trouble, and never thought of as hazardous, are "hazardous" by OSHA definition. It is not uncommon for a shop to have several hundred hazardous materials.

You are looking for anything which could affect a person's health, cause injury or death, or damage or pollute air, water or land. Unless you intend to hire a professional to help you identify hazardous materials, a few simple guidelines will help you to get started.

- First, don't sit at your desk to do the inventory. Walk through your facility and look at it as if you had never seen it before. Write down all materials that could be hazardous. While you may use purchasing records, do not depend on them exclusively, as it is typical for "stray" materials to make their way into an operation.
- Second, one of the easiest ways to ensure that you do not overlook materials is to assume that everything you use up that comes in a bottle, can, box or drum is hazardous, until proven otherwise. This assumption will simplify your search because you will not be tempted to make snap judgements and ignore a potentially hazardous material.
- Third, read the labels. They should tell you if it is hazardous. You are looking for the words "Caution," "Danger" or "Warning," or references to characteristics such as "Toxic," "Flammable," "Reactive" or "Corrosive."
- Fourth, check the MSDS. If you don't have it, call your distributor. If they say there is no MSDS for the product, ask them to put that information in writing.

In some circumstances, you may need to test materials, although the manufacturer's information is normally sufficient. Remember that materials may become hazardous or their properties may change when mixed with other materials or when used in certain processes.

UNDERSTANDING THE HAZARD COMMUNICATION REGULATION

(Continued)

THE INVENTORY

Material Safety Data Sheets

Material Safety Data Sheets (MSDSs) are produced by chemical manufacturers and are to be provided to you by the company which sells the material to you. The MSDS is updated each time the material changes. Each manufacturer has its own MSDS for its products.

The MSDS must contain information on all of the following subjects: chemical identification (name and manufacturer information), hazardous ingredients, physical data, health hazards, fire and explosion data, reactivity data, spill or leak procedures and special protection.

At this time, only the subject headings are standardized. MSDSs vary widely in terms of content, detail and readability. Generic MSDSs are not acceptable substitutes, although they may be used as a supplements as you attempt to make understandable and usable information available to your employees.

The MSDSs must be readily accessible to employees in each work area. Employees must know what they are and how to find and use them. In general it is best to keep them in binders in work areas where they can be easily updated and where they are available.

MSDSs should be indexed in a systematic way. The MSDS Binder is organized by product group. Materials within groups may be organized alphabetically by product name, or by a numbering cross-reference system. Part of your employee training will cover the method you use for filing the MSDSs so they will be easy to access in an emergency. (Remember, the inspector may ask an employee to show a specific MSDS in order to demonstrate the effectiveness of training.)

It is your responsibility to see that you have an MSDS for each hazardous material. It must be for the current formulation of that product (be careful; they may change frequently). It must be from the manufacturer which provided your current supply. If you have several versions or suppliers of a product, you need an MSDS for each.

UNDERSTANDING THE HAZARD COMMUNICATION REGULATION

(Continued)

MATERIAL SAFETY DATA SHEETS

Collect all of your MSDSs and check them against your inventory. If you are missing any MSDSs, call your distributor and request them. If you do not have them within a few days, request them in writing from your distributor. At the same time, you may wish to also request them in writing directly from the manufacturer. If you do not receive the MSDS within 25 working days, notify OSHA of your attempts. Keep copies of this letter.

The following letter gives you a suggested format for requesting MSDSs. When you request them in writing, send the request by registered mail. Keep copies of the letter and of the post office receipt. If questioned, you will be able to demonstrate your good faith efforts to obtain the MSDSs.

UNDERSTANDING THE HAZARD COMMUNICATION REGULATION

(Continued)

MATERIAL SAFETY DATA SHEETS

(Continued)

MSDS REQUEST LETTER

Date:

Name of Manufacturer or Distributor

Address

City, State, Zip

We are currently using a product manufactured by your company that we believe is considered a hazardous material. Federal and state regulations require us to possess an MSDS for each hazardous material we use.

Please send us a copy of the Material Safety Data Sheet(s) for the product(s) listed below:

(Name and Description of Each Hazardous Material)

Please send the MSDS(s) to:

Your Name

Company Name

Address

City, State, Zip

If this product does not require an MSDS, please notify us in writing.

If you have any questions regarding our request, please contact:

(Name)

(Phone Number)

We appreciate your cooperation in this matter.

Sincerely,

Container Labeling

Container labeling will be an issue for you in three ways. Although materials sold to you are supposed to be properly labeled, it is your responsibility to see that they stay that way. Second, your employees may take chemicals from larger containers and put them into different or smaller ("secondary") containers for ease of use. If more than one person has access to this secondary container or if the material is not used up in one work session, that container must be labeled. Third, you may have piping whose contents need to be identified.

Employees need to know what they are dealing with in case of leaks or spills. Any employee who uses a material must have immediate access to information about the chemical which ties back to the MSDS. The employee needs to know the immediate hazards of improperly handling the material.

Two common labeling systems use colored bars or diamonds to identify the hazard with a numbering system which indicates severity of a hazard. Other labels use symbols which identify the hazard and the protection required when using the substance. Some labels combine these approaches. There is no nationally required system, although some states or localities may prescribe a system.

In selecting a labeling approach, remember that the idea is to give employees enough information with which to protect themselves. Factors to consider include the extent to which your employees speak or read English, and the amount of time and effort you want to put into training and retraining in the interpretation of the labels. Labels should be intuitively easy to interpret accurately; and your employees must understand what your system means and how to return to the MSDS for more information.

States may differ in their labeling requirements. In some states, it is necessary to refer to target organs or to specific short and long term effects of the material. Check with your local regulators for special requirements.

Finally, there are specific rules governing the labeling of hazardous wastes for both storage and shipment. Refer to state and local regulators for information regarding the wording, the type of label and the addition of information about accumulation times for the wastes.

UNDERSTANDING THE HAZARD COMMUNICATION REGULATION

(Continued)

CONTAINER LABELING

Employee Training

Employee training is the heart of "Right to Know." The test of an acceptable training program is whether employees **absorbed** the training, not whether they **attended** training. Simply conducting classroom training is not enough. You need to be sure that employees understand that training.

Training must cover the following points. The employees must:

- Understand they have legal rights under "Right to Know" about hazards faced on the job and about protection from the hazards.
- Understand which materials are hazardous. An inventory must be provided. Employees must know how to identify and detect hazardous materials.
- Know about MSDSs, about the information provided in each section of the MSDS and where the MSDSs for the work area are found and indexed.
- Know how your labeling system works and where to find required information.
- Know what protective equipment or procedures are required for use of each hazardous material, where equipment is kept and how to maintain it.
- Be told who is responsible for updating information and ensuring that MSDSs and labels are available. Employees must know where the written plan is kept.

Deciding who needs training, and at what level, will be important to you. Consider any employee who could be exposed to hazardous materials under any conditions. Remember that office personnel may be asked to call for help in the event of fire or employee injury. It is important that they know about the materials and about MSDSs so they provide the best information to hospitals or emergency responders.

If you have non-English speaking employees, or those who have difficulty reading English, you will need to set up procedures to help them. This could mean encouraging them to ask specific individuals for help and information, providing labels and warnings with symbols or in other languages and arranging for training in those languages.

UNDERSTANDING THE HAZARD COMMUNICATION REGULATION

(Continued)

EMPLOYEE TRAINING

Documentation

As a matter of good management practice, and for your own protection, it is critical that you keep records which document your compliance with "Right to Know" requirements.

- **Document your training efforts.** Copies of a training sign-up sheet are provided in the training section of this binder. Use a sign-in sheet whenever you do "Right to Know" training. It is also important to document that employees understand the training you have provided. Written review exercises are recommended for this purpose. Sign and keep copies of these exercises when completed.
- **Update your inventory** whenever you add a new material. Use your inventory to track use of materials. Get rid of excess or infrequently used materials. Find less hazardous alternatives to more troublesome chemicals. Using the inventory information could easily result in substantial savings to your business.
- **Maintain MSDSs** for all hazardous materials on site. If you used them, maintain copies of MSDS request letters to your suppliers. Some advise that you maintain copies of out of date MSDSs indefinitely in case questions come up about materials to which employees may have been exposed in the past.
- **Update your plan** whenever you have a change of personnel, processes, chemicals or procedures. Keeping it current will take only a few minutes of your time and will help you focus on safety issues on a regular basis.

Keep records in a handy place. Set up a specific place in your files for regulatory compliance record keeping. Set aside one section for "Right to Know" documentation. If an inspector comes, you should be immediately able to produce the written plan, the inventory, MSDSs, training records and copies of written procedures without fumbling through your files.

UNDERSTANDING THE HAZARD COMMUNICATION REGULATION

(Continued)

DOCUMENTATION

The following is an outline of typical hazardous waste management issues. It is provided to alert you to the existence of regulations that may affect you in addition to those for "Right to Know". If you use parts cleaning tanks or dispose of excess paints and thinners, you generate hazardous waste under federal regulations. Waste solvent or carburetor cleaner, caustic wastes, batteries and battery acid are also likely candidates. States may also expand the list to include such materials as waste crankcase or transmission oil, antifreeze, brake fluid and automatic transmission fluid.

In the U.S., hazardous wastes are regulated at the federal level under the Resource Conservation and Recovery Act (RCRA). Managing hazardous wastes can be very complex and the rules also may vary widely from state to state. A thorough understanding is required. Contact your association, waste vendors, publishers and your state's hazardous waste regulators for complete information.

Depending on the state you do business in and the amount of waste you generate, proper management of hazardous wastes requires several actions. You are responsible for some or all of the following:

- Identifying your hazardous wastes.
- Properly classifying wastes and selecting treatment and disposal options.
- Determining your generator status.
- Notifying state or federal agencies.
- Properly managing wastes on-site.
- Selecting a transporter and disposal facility.
- Using a manifest for shipping.
- Filing the proper notifications and keeping records.

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES INTRODUCTION

Identifying Hazardous Wastes

Do You Generate Hazardous Waste?

Before you answer this question too quickly, picture what your facility would have at the end of a "normal" month if the only materials that left your site were specifically for sale to or use by your customers. What if the following things happen:

All of your drains and sewers are plugged. The garbage collector doesn't show up. Nothing gets swept out the door. No rags and wipes are taken for cleaning. The parts cleaners and tanks can't be emptied. The air vents are plugged.

While this picture is fresh, list all the wastes generated in your facility. Think about each machine or process and each work area. What does each person do routinely and what happens when there is an accident? What is left over? What gets thrown out? How much of each kind of waste is generated? How frequently is it generated?

List all of your wastes. Some of them may be "hazardous," even if you have never thought of them that way before.

IT IS YOUR RESPONSIBILITY AS A GENERATOR OF WASTES TO DETERMINE WHETHER THEY ARE HAZARDOUS OR NOT, AND TO KNOW EXACTLY WHAT CAN AND CANNOT BE DONE WITH THEM. Ignorance is no excuse. It pays to be right.

(Many of the materials piling up at the end of the month are probably not hazardous. However, disposal of many may be costing you and your community, so don't stop thinking about minimizing them. Ask your accountant to tell you how much you pay every month to have things hauled or drained away.)

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES

(Continued)

IDENTIFYING HAZARDOUS WASTES

Waste Classification and Treatment Standards

Current legislation restricts the landfilling of hazardous wastes (*the "land bans"*). The basic idea of the land bans is that certain waste cannot be landfilled without prior treatment which renders it less hazardous and less likely to migrate from the disposal site.

A **treatment standard** has been set for each waste which tells you how, or to what level, your waste must be treated. Treatment might include recycling, incineration, neutralization or other processes which change the characteristics or which destroy or bind up the hazardous constituents of the waste. It is extremely important that you properly identify each waste and make the correct decisions about how it must be treated prior to disposal.

The U.S. Environmental Protection Agency and the states have very specific definitions as to what constitutes a hazardous waste. It is critical that you understand these differences so that you assign the appropriate waste codes and treatment standards to each waste.

You will need to check the EPA's lists of hazardous materials to see if your wastes are "**listed**." You will then determine if any of your wastes are also "characteristically" hazardous. This means you **need to know if the waste has certain characteristics (ignitable, corrosive, reactive, toxic)** as defined in the regulations. You will then determine whether your waste is a "wastewater" or not.

Labels, MSDSs and package inserts for materials used in the waste-generating process may provide clues on this subject. Contact your state's hazardous waste agency, your local water treatment district and the landfill which takes your waste for information on whether any or all are regulated. You may also check with an analytical chemistry lab or a recycling, treatment or disposal contractor. Whatever method you use, you must correctly identify and document the reason your waste is considered hazardous. It is critical that you maintain records documenting your decisions about waste characteristics.

Once you have determined all of the codes which apply to your wastes, you will **determine the applicable treatment standard or technology for each waste**. For some waste, a concentration standard is set by regulations and you get to pick the treatment method for managing the waste. In other cases, a treatment method is pre-defined and you need to know what that method is.

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES

(Continued)

WASTE CLASSIFICATION AND TREATMENT STANDARDS

Determining Generator Status

Your generator status is determined by how much waste you generate. This then sets what you have to do and who wants you to do it.

You need to determine the highest amount of waste you could produce in a month. Include in this number not only on-going production wastes for your busiest month but also potential spills or accidents and damaged or out of date product. You will want to design your waste management system to deal with your worst case scenario about waste quantities.

Note: Legal requirements are stated in kilograms (kg). Some rules of thumb will help you estimate volumes. 100kg is about 27 gallons or 220 pounds or 1/2 drum. Convert your waste estimates to kilograms to ensure that you are operating within limits. Your wastes may be heavier or lighter, so check it out.

If you generate 100kg or less of hazardous waste per month (or 1kg of acute hazardous waste) you are conditionally exempt from many Federal regulations, but **not** necessarily from some State regulations and enforcement. In some states, you may need to notify the state if you generate less than 100kg per month.

If you generate more than 100kg of hazardous waste but less than 1000kg per month you are subject to Federal regulation and enforcement as a Small Quantity Generator. If you generate more than 1kg of acute hazardous waste per month you are fully regulated and need to carefully check on the requirements. You need to obtain an identification number from the EPA Regional Office for your area. Call your state hazardous waste management agency or the EPA Regional Office (see Appendix) and ask for a copy of the "Notification of Hazardous Waste Activity" form. You will receive a booklet with the form and instructions for completing it. You need a form and an identification number for each **location**.

If you move to a new location, stop generating a particular hazardous waste or begin generating a different hazardous waste you need to notify the EPA of the change. Send a letter indicating the specifics of the change. Using registered mail is recommended.

As a generator of hazardous waste, you may also need to obtain other state and local permits. You need to check with both state and local officials regarding the need for a Public Health License, permits to discharge wastewater to sewers or streams, air permits, and treatment or storage permits.

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES

(Continued)

DETERMINING GENERATOR STATUS

On-site Waste Management

If you generate 100 kg or less of hazardous waste per month, you must be careful never to accumulate more than 1000 kg of waste (or about 300 gallons) on site at one time. If you accumulate more than 1000kg, your regulatory status changes and there are more requirements you must follow.

If you generate more than 100 kg but less than 1000 kg per month you may accumulate and store hazardous waste for up to 180 days on-site without obtaining a storage permit if you follow certain rules very carefully.

- Accumulated waste may never exceed 6000kg.
- Containers must be labeled and managed as described below.
- An emergency contingency program must be in place as described below.
- If you ship waste more than 200 miles for disposal, you may store for 270 days.
- The time clock starts ticking the first day you put waste in the drum.

Under certain specific conditions you may be able to fill the waste container in a "satellite accumulation area" before you start counting storage time. In this case the stationary container must be in the area where the waste is generated, must be labeled "Hazardous Waste" and must be under the control of the operator. The container cannot exceed 55 gallons. If the container is then moved to storage, you label it with the first date in storage and you may store it for only 180 days (or 270, as described above).

Containers And Storage Area

Containers must not leak, and must be in good condition. Otherwise, waste must be moved to a suitable container immediately. Containers should always be closed during storage, except when adding or removing waste and should be handled so they will not rupture or spill. Containers must be compatible with the wastes they hold. In some cases, large containers should be grounded. Incompatible wastes and materials must not be stored in the same container, or near each other.

You must inspect the storage area at least once a week to ensure that it is secure, is capable of containing leaks or spills and is clearly labeled as to the hazards.

Labeling (on-site)

Each container must be clearly marked with the first date that waste was placed in that container (or, if you are moving waste into a storage area because you have reached a quantity limitation in the satellite accumulation area, the date the quantity was exceeded or the date the container was moved into storage).

The words "Hazardous Waste" must be clearly marked on each container.

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES

(Continued)

ON-SITE WASTE MANAGEMENT

Training

Your employees must be thoroughly familiar with all requirements of hazardous waste management and proper response to emergencies. At a minimum they should know how to use emergency equipment and communications and how to respond to fires, explosions and water contamination incidents.

Emergency Preparedness

As a Small Quantity Generator you must have an emergency contingency plan which covers what people must do at your facility in response to fires, explosions or any unplanned release of hazardous materials to air, soil or surface water. It need not be in writing under federal regulations, but it is a good idea. Many states require a written plan.

You must have:

- an Emergency Coordinator with the authority to deal with emergencies
- an alarm/communications system, portable fire extinguishers and water
- numbers for the Emergency Coordinator, fire department and spill responder posted by the phone
- location of fire alarms, extinguishers and spill control equipment posted by the phone

The plan should:

- detail arrangements with police, fire, hospitals and state and local emergency response teams
- list names, addresses and phone numbers for emergency coordinators
- list emergency equipment
- detail evacuation procedures
- detail all routine and emergency waste management procedures

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES

(Continued)

ON-SITE WASTE MANAGEMENT

(Continued)

Selecting a Transporter and Waste Management Facility

Choosing a waste hauler and the right waste facility are two of the most important decisions you will make regarding your hazardous waste. Each will be handling your wastes out of your control — **and you will still be responsible for them.** Make arrangements well in advance to have your hazardous wastes removed. It takes time to select the right hauler and waste management facility.

If you transport your wastes off-site, the regulations are the same, no matter how much waste you generate.

- Hazardous waste transporters and the waste treatment and disposal facilities must have an EPA ID Number and all required federal and state permits.
- Hazardous waste transporters and disposal facilities will not haul or accept your hazardous waste unless you have an EPA ID Number.

Find out who hauls and manages hazardous wastes in your area.

- Check with other businesses that generate hazardous waste to see who they use. Check with trade associations, Better Business Bureau or Chamber of Commerce, and with your state hazardous waste management agency or regional EPA office. Several publishers also maintain lists of haulers and waste management facilities.

After you select a hauler and waste management facility:

- Contact the hauler and the facility you have selected and make sure they have the necessary EPA ID Number, permits and insurance. Ask if they can and will handle your specific hazardous wastes. If possible, visit their facilities so that you can form an opinion about how they are managing wastes. Ask if they have the financial resources to protect you in the event of accidents, cleanup actions or legal proceedings.
- Contact your EPA regional office or state hazardous waste management agency to verify that the hauler and facility you have selected have valid EPA identification numbers and whether or not the company has had problems in the past relating to their permits.

When you are ready to ship your wastes:

- Contact your hauler for assistance in packaging and labeling your waste containers to meet Department of Transportation (DOT) regulations. Your state transportation agency or waste management facility can also help you understand DOT requirements.

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES

(Continued)

SELECTING A TRANSPORTER AND WASTE MANAGEMENT FACILITY

Manifests and Transportation

Wastes which are "listed" or are "characteristically hazardous" **at the time you ship them** must be sent to a permitted hazardous waste facility and they must be carried by a registered hazardous waste hauler. In general, if you ship hazardous waste off-site for any reason you must use a Hazardous Waste Manifest.

The manifest is used to track the waste and to ensure that it goes where it is supposed to go, on a timely basis. While your transporter may help you complete the manifest, it is clearly your responsibility to ensure that it is filled out and distributed correctly.

Many states have their own versions of the manifest and specify the form you must use for shipments within and to that state. The manifest is prepared for each shipment of waste.

- You will show not only your EPA ID number, but those of the transporter and the disposal or treatment facility as well.
- You will need to list and describe your waste by container, using the U.S. Department of Transportation identification number and proper shipping name for the waste you are shipping. The most practical way to determine the DOT number and description is to enlist the help of your transporter (although you are still ultimately responsible for the accuracy of the information).
- You will also show the waste codes for the waste.
- You will describe the quantity of waste you are shipping.
- You will sign a certification that materials are properly classified and prepared for shipment and that you have a waste minimization program.
- You need the transporter's signature and the date the waste is taken.

Keep two copies of the manifest. One copy must be submitted to EPA or the state within 30 days. You should receive a copy of the manifest from the place you sent the waste within 60 days of the shipment. If you don't, file an exception report with the EPA.

Preparing Waste for Shipment

For shipment, waste must be placed in an approved U.S. Department of Transportation container, and must be labeled, placarded and marked according to DOT regulations. Each container of less than 110 gallons must be marked with the words and information: "HAZARDOUS WASTE — Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency." Then include the generator's name and address, and the manifest document number.

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES

(Continued)

MANIFESTS AND TRANSPORTATION

Notification and Record Keeping

Record Keeping

Generators must keep the following records for at least **three** years. If the EPA requests, or if there are unresolved enforcement actions, you may be asked to keep these for more than three years:

Each signed manifest

Test results, waste analysis or anything used to classify your wastes.

Any notifications, certifications, demonstrations, waste analysis data and any other information used to support your compliance with the Land Disposal Restriction must be kept for no less than **five** years.

Notifications

Every shipment of restricted waste must include a notification and/or certification (if applicable). If your hauler or treatment/disposal facility does not supply you with a form to make this notification, you must write this out yourself - **with the specific information and language contained in the regulations**. (Your state may have additional requirements.) If you have a "Tolling Agreement" you need to comply with the notification and certification requirements only for the first shipment under an agreement. Keep records of your agreement and the notification and certifications for at least three years after the expiration of your agreement.

One of the following notifications must be included:

1. If wastes have **not met** the treatment standards or they exceed the prohibition levels by the time they leave your operation, you must specifically notify the facility receiving the wastes of what is in the waste and what the applicable treatment standards are. (Be sure to include all of the specific data and language required.)
2. If waste **meets** standards when it leaves your facility, you must notify the facility receiving the waste that the waste can be land disposed without further treatment and you must certify that it meets the applicable State or Federal standards. In addition, you must include a very specific certification which states that you are personally familiar with the waste contents and that it meets the treatment standards. (Again, there are specific requirements for data and language to be included.)
3. If the waste is subject to a case by case extension, an exemption, or a nationwide variance or an extension to the implementation date, you must notify the facility that the waste is not prohibited from land disposal. (Again, follow the specific rules for data and language that must be submitted.)

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES

(Continued)

NOTIFICATION AND RECORD KEEPING

Limiting Your Waste Handling Liability

Under federal legislation, you are responsible for your hazardous wastes from "cradle to grave". This means that from the time you take possession of a hazardous material until the material is recycled or changed into a non-hazardous form, you are responsible for that material. Even if you dispose of it at a permitted facility, your liability continues. It is in your best interest to minimize the waste you produce and thoroughly check out transporters, recyclers, and disposal facilities.

Waste Minimization

Public policy clearly states that hazardous waste generation should be reduced and that wastes should be minimized. The policy applies to generators of all sizes. The principle is simple. First, you should not generate so much waste in the first place ("*Source Reduction*"). Second, you should find ways of minimizing the wastes that are generated and their impact through reclamation, recycling and treatment ("*Waste Minimization*"). Quite aside from regulatory requirements, it is just good business to minimize wastes.

Waste minimization programs work best when there is a strong company policy statement endorsing the concept and the program, and a real effort is made to involve employees at all levels in the program. Many companies have found that incentive programs help focus attention and interest on the issue. Start by distributing a written company policy statement. Then involve your employees and reward them for their efforts.

Take a walk around your facility. Ask yourself the following questions for each area and for each waste.

Which shift generates the most waste?

Which processes or machines generate the most waste?

What suggestions do operators have for less wasteful operations?

Do you see evidence of spills or leaks? How is spill cleanup material being disposed of? What equipment helps control leak and spill problems? Ask about stained walls or floors, and rags used to clean up spills.

How long have hazardous materials and wastes been stored?

Are wastes segregated by type?

Is employee training up to date?

How much off-specification or out of date product must be disposed of? How much do employee errors contribute to your waste?

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES

(Continued)

LIMITING YOUR WASTE HANDLING LIABILITY

Recycling

To decrease your liability in the waste handling process, recycling represents an excellent alternative. Recycling involves removing the impurities and contaminants from your waste and then turning the waste back into a reusable product.

Safety-Kleen Corporation is the world's largest recycler of contaminated fluids. Safety-Kleen recycles mineral spirits, chlorinated and fluorinated solvents and almost any kind of contaminated organic fluid. Recycling your fluids conserves resources, lowers your waste handling liability, protects the environment and offers an economical alternative to other methods of disposal.

Safety-Kleen will perform a waste status survey at your facility and will assist you in designing and implementing a total waste stream management system. Safety-Kleen's service includes a thorough analysis and explanation of the hazardous constituents contained in your hazardous waste and assistance in processing paperwork, including relief from the "manifesting provision" for waste generators.

SMALL QUANTITY GENERATOR HAZARDOUS WASTE RULES

(Continued)

LIMITING YOUR WASTE HANDLING LIABILITY

(Continued)

		No. 552634
		Date: _____
<p>Clear Solutions to Contaminated Fluid Problems</p> <h3>Certificate of Assurance</h3>		
<p>For _____</p> <p>Safety-Kleen Corp. provides solvents for use in our equipment and in customer owned equipment. Safety-Kleen Corp. also removes contaminated solvents, fluids and used oils from its customers premises for processing. Safety-Kleen Corp. certifies to its customers that we assume responsibility for proper disposal of these solvents, fluids and oils as follows:</p> <ul style="list-style-type: none">• We agree to remove waste fluids from your facility.• We agree to transport, store, recycle and dispose of the contaminated fluids we remove in accordance with all applicable state and federal laws.• In the event a spill occurs while we are transporting, storing, recycling or disposing of your contaminated fluids, we will pay all costs and expenses of clean-up of that spill.• In the event ground or water pollution results from our transporting, storing, recycling, reclaiming, re-refining or disposal of your contaminated fluids, we will pay all costs and expenses to remedy that pollution. <p>While no one can fully relieve your firm of its own "cradle-to-grave" responsibility as a generator of hazardous waste, this certificate is your assurance that our handling of your contaminated fluids will be in the most economical and ecologically sound manner available.</p>		
Over \$700,000,000 in Assets NYSE Symbol: (SK) D&B Rating: 5A1	<p>SAFETY-KLEEN CORP.</p>  Donald W. Brinkman Chief Executive Officer	
© 1991 Safety-Kleen Corp. Printed in U.S.A. on recycled paper	Form 91445 Rev. 1/91	

In this section you will find a copy of the Employee Training Manual and "Employee Training Sign-Up Sheets." Use the following tips to ensure a good training experience.

1. Have each employee read a module and respond to the review exercises. Review the answers and make sure the employee understands any corrections you make. (An answer key has been included in this Binder.) When you are satisfied that the employee understands the module, sign and date the exercise. File these sheets carefully.
2. In addition to using training manuals bring your MSDS collection, the inventory and the written plan to the training session. Point out where each is kept. Pick MSDSs for several materials your employees often use. Read through them (especially the sections on hazards, symptoms of exposure and special protection), so that employees have a concrete example of the information they have read about.
3. When you prepare the inventory, make sure that you actually review labels and MSDSs to see if you are currently providing the proper protective equipment and are using the material correctly. Go over existing procedures and explain new procedures at the training session.
4. Do not limit your training to one session. Periodically through the year, ask about "Right to Know" issues. Discuss new products (or old ones). Reinforce the training. Use wall charts, posters, videos, and other resources to refresh the training throughout the year.
5. ALWAYS document both the existence of a training session (see sign-up sheet) and the extent to which employees understood the subject (see review exercises). Keep this documentation where you will remember it as inspectors will ask to see it.

EMPLOYEE TRAINING MODULES INTRODUCTION

EMPLOYEE TRAINING SIGN-IN SHEET

Today's Date: 6/23/14 / 11:00 AM / 11:00 AM

Topic Discussed: EMPLOYEES ~~LEAVE~~
RIGHT TO KNOW

Instructor: BILL FULTON

EMPLOYEE TRAINING MODULES

(Continued)

EMPLOYEE TRAINING SIGN-IN SHEET

Employee:

- | | |
|----------------------------|-----------|
| 1) <u>Gary Delaney</u> | 11) _____ |
| 2) <u>Steve R. Merrill</u> | 12) _____ |
| 3) <u>Victor Dominguez</u> | 13) _____ |
| 4) <u>Rafael L. Lopez</u> | 14) _____ |
| 5) <u>[Signature]</u> | 15) _____ |
| 6) <u>[Signature]</u> | 16) _____ |
| 7) <u>[Signature]</u> | 17) _____ |
| 8) _____ | 18) _____ |
| 9) _____ | 19) _____ |
| 10) _____ | 20) _____ |

Note: Use additional sheets if needed or prepare a sheet that contains the information above.

Name:

Carlos Rosales**THE EMPLOYEE'S
"RIGHT TO KNOW"**

Complete the following exercise for Module 1. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) The new law issued by the government and OSHA is called the HAZARD Communication Regulation.
- 2) The new regulation says you have a "RIGHT to KNOW" what hazards you face on the job.
- 3) The employee must read WARNING labels and MATERIAL SAFETY Data Sheets and follow the instructions.

True or False — Mark T for True, F for False

- T Only you can really protect your safety on the job.
- T You have the right to receive information regarding the hazardous materials you work with.
- F Your employer doesn't have to educate you about hazardous materials if he is too busy.
- F It is not important to understand warning labels.

Circle the best answer

- 1) If you are in doubt about how to handle a particular hazardous substance ask:
 - a) your next door neighbor
 - b) your parents
 - c) your shop manager
 - d) none of the above
- 2) The employer that uses hazardous materials must provide a SAFE WORK PLACE for his employees.
 - a) sack lunch
 - b) safe workplace
 - c) flexible schedule
 - d) all of the above
- 3) The only person that can really keep you safe on the job is:
 - a) your employer
 - b) the government
 - c) yourself
 - d) your spouse

TEAR ALONG DOTTED LINE



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 1: The Employee's "Right to Know."

THE EMPLOYEE'S "RIGHT TO KNOW" (Continued)

Employee Sam Smith Date _____

I am satisfied that the employee, (named above) understands the contents of Module 1.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE





MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 1: The Employee's "Right to Know."

THE EMPLOYEE'S "RIGHT TO KNOW"

(Continued)

Employee George Pacheco Date 04.21.93

I am satisfied that the employee, (named above) understands the contents of Module 1.

Shop Manager _____ Date _____

Name:

Jorge Pacheco

Complete the following exercise for Module 1. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

THE EMPLOYEE'S "RIGHT TO KNOW"

Fill in the blanks

- 1) The new law issued by the government and OSHA is called the HAZARD Communication Regulation.
- 2) The new regulation says you have a "Right to
to KNOW" what hazards you face on the job.
- 3) The employee must read WARNING labels and MATERIAL SAFETY Data Sheets and follow the instructions.

True or False — Mark T for True, F for False

- T Only you can really protect your safety on the job.
- T You have the right to receive information regarding the hazardous materials you work with.
- F Your employer doesn't have to educate you about hazardous materials if he is too busy.
- F It is not important to understand warning labels.

Circle the best answer

- 1) If you are in doubt about how to handle a particular hazardous substance ask:
 - a) your next door neighbor
 - b) your parents
 - ☒ c) your shop manager
 - d) none of the above
- 2) The employer that uses hazardous materials must provide a _____ for his employees.
 - a) sack lunch
 - ☒ b) safe workplace
 - c) flexible schedule
 - d) all of the above
- 3) The only person that can really keep you safe on the job is:
 - ☒ a) your employer
 - b) the government
 - ☒ c) yourself
 - d) your spouse

TEAR ALONG DOTTED LINE

Name: DORA A. DOMINGUEZ

Complete the following exercise for Module 1. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

THE EMPLOYEE'S "RIGHT TO KNOW"

Fill in the blanks

- 1) The new law issued by the government and OSHA is called the HAZARD Communication Regulation.
- 2) The new regulation says you have a "RIGHT to KNOW" what hazards you face on the job.
- 3) The employee must read WARNING labels and MATERIAL SAFE Data Sheets and follow the instructions.

True or False — Mark T for True, F for False

- T Only you can really protect your safety on the job.
- T You have the right to receive information regarding the hazardous materials you work with.
- F Your employer doesn't have to educate you about hazardous materials if he is too busy.
- F It is not important to understand warning labels.

Circle the best answer

- 1) If you are in doubt about how to handle a particular hazardous substance ask:
 - a) your next door neighbor
 - b) your parents
 - c) your shop manager
 - d) none of the above
- 2) The employer that uses hazardous materials must provide a SAFE WORK PLACE for his employees.
 - a) sack lunch
 - b) safe workplace
 - c) flexible schedule
 - d) all of the above
- 3) The only person that can really keep you safe on the job is:
 - a) your employer
 - b) the government
 - c) yourself
 - d) your spouse



MODULE 1

I have reviewed this exercise with my shop manager. I understand the contents of Module 1: The Employee's "Right to Know."

THE EMPLOYEE'S "RIGHT TO KNOW"

(Continued)

Employee  Date _____

I am satisfied that the employee, (named above) understands the contents of Module 1.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name: Rolando L. LARA**THE EMPLOYEE'S
"RIGHT TO KNOW"**

Complete the following exercise for Module 1. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

1) The new law issued by the government and OSHA is called the Hazard Communication Regulation.

2) The new regulation says you have a "RIGHT TO KNOW RIGHT to AT WORK KNOW" what hazards you face on the job.

3) The employee must read WARNING labels and MATERIAL SAFETY Data Sheets and follow the instructions.

True or False — Mark T for True, F for False

T Only you can really protect your safety on the job.

--- You have the right to receive information regarding the hazardous materials you work with.

F Your employer doesn't have to educate you about hazardous materials if he is too busy.

F It is not important to understand warning labels.

Circle the best answer

1) If you are in doubt about how to handle a particular hazardous substance ask:

- a) your next door neighbor b) your parents
c) your shop manager d) none of the above

2) The employer that uses hazardous materials must provide a SAFE WORK PLACE for his employees.

- a) sack lunch b) safe workplace
c) flexible schedule d) all of the above

3) The only person that can really keep you safe on the job is:

- a) your employer b) the government
c) yourself d) your spouse



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 1: The Employee's "Right to Know."

THE EMPLOYEE'S "RIGHT TO KNOW"

(Continued)

Employee Rafaelo L. Lora Date 3/18-93

I am satisfied that the employee, (named above) understands the contents of Module 1.

Shop Manager Bill Fults Date 3/18/93

TEAR ALONG DOTTED LINE

Name: VICTOR DOMINGUEZ

Complete the following exercise for Module 1. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) The new law issued by the government and OSHA is called the Hazard Communication Regulation.
- 2) The new regulation says you have a "RIGHT" to KNOW " what hazards you face on the job.
- 3) The employee must read WARNING labels and SAFETY MATERIAL Data Sheets and follow the instructions.

True or False — Mark T for True, F for False

- T Only you can really protect your safety on the job.
- T You have the right to receive information regarding the hazardous materials you work with.
- F Your employer doesn't have to educate you about hazardous materials if he is too busy.
- F It is not important to understand warning labels.

Circle the best answer

- 1) If you are in doubt about how to handle a particular hazardous substance ask:
a) your next door neighbor b) your parents
c) your shop manager d) none of the above
- 2) The employer that uses hazardous materials must provide a _____ for his employees.
a) sack lunch b) safe workplace
c) flexible schedule d) all of the above
- 3) The only person that can really keep you safe on the job is:
a) your employer b) the government
c) yourself d) your spouse



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 1: The Employee's "Right to Know."

THE EMPLOYEE'S "RIGHT TO KNOW"

(Continued)

Employee Victor Dominguez Date 3/18/93

I am satisfied that the employee, (named above) understands the contents of Module 1.

Shop Manager Bill Fulton Date 3/18/93

TEAR ALONG DOTTED LINE

Name: GARY SOLANO

THE EMPLOYEE'S "RIGHT TO KNOW"

Complete the following exercise for Module 1. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) The new law issued by the government and OSHA is called the HAZARD ~~Employee's Right to Know~~ Communication Regulation.
- 2) The new regulation says you have a "Right" to Know "what hazards you face on the job.
- 3) The employee must read WARNING/SAFETY labels and _____ Data Sheets and follow the instructions.

True or False — Mark T for True, F for False

- T Only you can really protect your safety on the job.
- T You have the right to receive information regarding the hazardous materials you work with.
- F Your employer doesn't have to educate you about hazardous materials if he is too busy.
- F It is not important to understand warning labels.

Circle the best answer

- 1) If you are in doubt about how to handle a particular hazardous substance ask:
 - a) your next door neighbor
 - b) your parents
 - c) your shop manager
 - d) none of the above
- 2) The employer that uses hazardous materials must provide a _____ for his employees.
 - a) sack lunch
 - b) safe workplace
 - c) flexible schedule
 - d) all of the above
- 3) The only person that can really keep you safe on the job is:
 - a) your employer
 - b) the government
 - c) yourself
 - d) your spouse



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 1: The Employee's "Right to Know."

THE EMPLOYEE'S "RIGHT TO KNOW"

(Continued)

Employee *[Signature]* Date 3/4/93

I am satisfied that the employee, (named above) understands the contents of Module 1.

Shop Manager *[Signature]* Date 3/16/93

1. LAR ALONG DOTTED LINE



Name:

Steve MURRIETTA

Complete the following exercise for Module 1. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

THE EMPLOYEE'S "RIGHT TO KNOW"

Fill in the blanks

- 1) The new law issued by the government and OSHA is called the HAZARD Communication Regulation.
- 2) The new regulation says you have a "Right to know" to anything being in a room what hazards you face on the job.
- 3) The employee must read warning labels and material Data Sheets and follow the instructions.

True or False — Mark T for True, F for False

- T Only you can really protect your safety on the job.
- T You have the right to receive information regarding the hazardous materials you work with.
- F Your employer doesn't have to educate you about hazardous materials if he is too busy.
- F It is not important to understand warning labels.

Circle the best answer

- 1) If you are in doubt about how to handle a particular hazardous substance ask:
 - a) your next door neighbor
 - b) your parents
 - c) your shop manager
 - d) none of the above
- 2) The employer that uses hazardous materials must provide a _____ for his employees.
 - a) sack lunch
 - b) safe workplace
 - c) flexible schedule
 - d) all of the above
- 3) The only person that can really keep you safe on the job is:
 - a) your employer
 - b) the government
 - c) yourself
 - d) your spouse

TEAR ALONG DOTTED LINE



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 1: The Employee's "Right to Know."

THE EMPLOYEE'S "RIGHT TO KNOW" (Continued)

Employee Steve Marshall Date 3/18/92

I am satisfied that the employee, (named above) understands the contents of Module 1.

Shop Manager Bill Johnson Date 3/18/92

TEAR ALONG DOTTED LINE



Name: _____

Angelina Chua

Complete the following exercise for Module 1. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

THE EMPLOYEE'S "RIGHT TO KNOW"

Fill in the blanks

- 1) The new law issued by the government and OSHA is called the Hazard Communication Regulation.
- 2) The new regulation says you have a "right" to know "what hazards you face on the job."
- 3) The employee must read warnings material labels and Safety and warning Data Sheets and follow the instructions.

True or False — Mark T for True, F for False

- True Only you can really protect your safety on the job.
- True You have the right to receive information regarding the hazardous materials you work with.
- False Your employer doesn't have to educate you about hazardous materials if he is too busy.
- False It is not important to understand warning labels.

Circle the best answer

- 1) If you are in doubt about how to handle a particular hazardous substance ask:
 - a) your next door neighbor
 - b) your parents
 - ☒ c) your shop manager
 - d) none of the above
- 2) The employer that uses hazardous materials must provide a safe work place for his employees.
 - a) sack lunch
 - ☒ b) safe workplace
 - c) flexible schedule
 - d) all of the above
- 3) The only person that can really keep you safe on the job is:
 - a) your employer
 - b) the government
 - ☒ c) yourself
 - d) your spouse

TEAR ALONG DOTTED LINE



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 1: The Employee's "Right to Know."

THE EMPLOYEE'S "RIGHT TO KNOW"

(Continued)

Employee

Angela

Date

4-16-93

I am satisfied that the employee, (named above) understands the contents of Module 1.

Shop Manager

Date

TEAR ALONG DOTTED LINE

EMPLOYEE TRAINING SIGN-IN SHEET

Today's Date: 3/16/2007

Topic Discussed: PROD. LABEL & MSDS

Instructor: Bill

EMPLOYEE TRAINING MODULES

(Continued)

EMPLOYEE TRAINING SIGN-IN SHEET

Employee:

- | | |
|-----------------------|-----------|
| 1) <u>[Signature]</u> | 11) _____ |
| 2) <u>[Signature]</u> | 12) _____ |
| 3) <u>[Signature]</u> | 13) _____ |
| 4) _____ | 14) _____ |
| 5) _____ | 15) _____ |
| 6) _____ | 16) _____ |
| 7) _____ | 17) _____ |
| 8) _____ | 18) _____ |
| 9) _____ | 19) _____ |
| 10) _____ | 20) _____ |

Note: Use additional sheets if needed or prepare a sheet that contains the information above.

Name:

Carlos Rosales

**PRODUCT LABELS
AND MATERIAL
SAFETY DATA
SHEETS**

Complete the following exercise for Module 2. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) The Hazardous Materials Inventory Roster lists all the materials used in your shop.
- 2) MSDS is short for MATERIAL SAFETY DATA SHEET
- 3) You should not use a material if the container doesn't have a WARNING label.

True or False — Mark T for True, F for False

- F Container labels list *all* of the same information contained in an MSDS.
- F If a container doesn't have a label it's safe to handle it if you can guess what it is.
- T The MSDS gives you the hazardous material details that don't fit on the label.
- T You should always read the container label before using a hazardous material.

Circle the best answer

- 1) If a container doesn't have a label you should:
 - a) not handle it until you know what is inside
 - b) find out what the material is from your employer
 - c) place a label on the container if the contents are hazardous
 - d) all of the above
- 2) Your employer is required to have an MSDS for:
 - a) at least half of the hazardous materials you work with
 - b) the majority of the hazardous materials you work with
 - c) none of the materials you work with
 - d) every hazardous material you work with
- 3) The product MSDS contains:
 - a) chemical identification
 - b) hazardous ingredients
 - c) everything that is known about the particular material



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 2: Product Labels and Material Safety Data Sheets.

Employee _____

Date _____

PRODUCT LABELS AND MATERIAL SAFETY DATA SHEETS (MSDS)

(Continued)

I am satisfied that the employee, (named above) understands the contents of Module 2.

Shop Manager _____

Date _____

TEAR ALONG DOTTED LINE

Name: DORA ALICIA DOMINGUEZ

Complete the following exercise for Module 2. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) The Hazardous Materials INVENTORY ROSTER lists all the materials used in your shop.
- 2) MSDS is short for MATERIAL SAFETY DATA SHEET
- 3) You should not use a material if the container doesn't have a WARNING label.

True or False — Mark T for True, F for False

- F Container labels list *all* of the same information contained in an MSDS.
- F If a container doesn't have a label it's safe to handle it if you can guess what it is.
- T The MSDS gives you the hazardous material details that don't fit on the label.
- T You should always read the container label before using a hazardous material.

Circle the best answer

- 1) If a container doesn't have a label you should:
 - a) not handle it until you know what is inside
 - b) find out what the material is from your employer
 - c) place a label on the container if the contents are hazardous
 - ☒ d) all of the above
- 2) Your employer is required to have an MSDS for:
 - a) at least half of the hazardous materials you work with
 - b) the majority of the hazardous materials you work with
 - c) none of the materials you work with
 - ☒ d) every hazardous material you work with
- 3) The product MSDS contains:
 - a) chemical identification
 - ☒ b) hazardous ingredients
 - c) everything that is known about the particular material

**PRODUCT LABELS
AND MATERIAL
SAFETY DATA
SHEETS**

TEAR ALONG DOTTED LINE



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 2: Product Labels and Material Safety Data Sheets.

Employee

Date

4-10-93

PRODUCT LABELS AND MATERIAL SAFETY DATA SHEETS (MSDS)

(Continued)

I am satisfied that the employee, (named above) understands the contents of Module 2.

Shop Manager

Date

4-10-93

TEAR ALONG DOTTED LINE

Name:

Rolando L. LARA**PRODUCT LABELS
AND MATERIAL
SAFETY DATA
SHEETS**

Complete the following exercise for Module 2. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) The Hazardous Materials YES IS lists all the materials used in your shop.
- 2) MSDS is short for _____
- 3) You should not use a material if the container doesn't have a WARNING label.

True or False — Mark T for True, F for False

- T Container labels list *all* of the same information contained in an MSDS.
- F If a container doesn't have a label it's safe to handle it if you can guess what it is.
- F The MSDS gives you the hazardous material details that don't fit on the label.
- T You should always read the container label before using a hazardous material.

Circle the best answer

- 1) If a container doesn't have a label you should:
 - a) not handle it until you know what is inside
 - ☒ b) find out what the material is from your employer
 - c) place a label on the container if the contents are hazardous
 - d) all of the above
- 2) Your employer is required to have an MSDS for:
 - a) at least half of the hazardous materials you work with
 - b) the majority of the hazardous materials you work with
 - c) none of the materials you work with
 - ☒ d) every hazardous material you work with
- 3) The product MSDS contains:
 - ☒ a) chemical identification
 - ☒ b) hazardous ingredients
 - c) everything that is known about the particular material

TEAR ALONG DOTTED LINE



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 2: Product Labels and Material Safety Data Sheets.

Employee B. J. Smith Date 4/11-93

PRODUCT LABELS AND MATERIAL SAFETY DATA SHEETS (MSDS)

(Continued)

I am satisfied that the employee, (named above) understands the contents of Module 2.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name:

GARY SOLANO

Complete the following exercise for Module 2. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) The Hazardous Materials INVENTORY ROSTER lists all the materials used in your shop.
- 2) MSDS is short for MATERIAL SAFETY DATA SHEET
- 3) You should not use a material if the container doesn't have a WARNING label.

True or False — Mark T for True, F for False

- F Container labels list *all* of the same information contained in an MSDS.
- F If a container doesn't have a label it's safe to handle it if you can guess what it is.
- T The MSDS gives you the hazardous material details that don't fit on the label.
- T You should always read the container label before using a hazardous material.

Circle the best answer

- 1) If a container doesn't have a label you should:
 - a) not handle it until you know what is inside
 - b) find out what the material is from your employer
 - c) place a label on the container if the contents are hazardous
 - d) all of the above
- 2) Your employer is required to have an MSDS for:
 - a) at least half of the hazardous materials you work with
 - b) the majority of the hazardous materials you work with
 - c) none of the materials you work with
 - d) every hazardous material you work with
- 3) The product MSDS contains:
 - a) chemical identification
 - b) hazardous ingredients
 - c) everything that is known about the particular material

**PRODUCT LABELS
AND MATERIAL
SAFETY DATA
SHEETS**

TEAR ALONG DOTTED LINE



I have reviewed this exercise with my shop manager. I understand the contents of Module 2: Product Labels and Material Safety Data Sheets.

Employee *Gary Lafany* Date *3/18/93*

**PRODUCT LABELS
AND MATERIAL
SAFETY DATA
SHEETS (MSDS)**
(Continued)

I am satisfied that the employee, (named above) understands the contents of Module 2.

Shop Manager *Bill Fults* Date *3/18/93*

TEAR ALONG DOTTED LINE

EMPLOYEE TRAINING SIGN-IN SHEET

Today's Date: 4-10-93
Topic Discussed: HANDLING OF HAZARDOUS
MATERIAL
Instructor: Bill

EMPLOYEE TRAINING MODULES

(Continued)

EMPLOYEE TRAINING SIGN-IN SHEET

Employee:

- | | |
|-----------------------|-----------|
| 1) <u>[Signature]</u> | 11) _____ |
| 2) <u>[Signature]</u> | 12) _____ |
| 3) _____ | 13) _____ |
| 4) _____ | 14) _____ |
| 5) _____ | 15) _____ |
| 6) _____ | 16) _____ |
| 7) _____ | 17) _____ |
| 8) _____ | 18) _____ |
| 9) _____ | 19) _____ |
| 10) _____ | 20) _____ |

Note: Use additional sheets if needed or prepare a sheet that contains the information above.

Name: Rolando L. Lara**HANDLING OF
HAZARDOUS
MATERIALS**

Complete the following exercise for Module 3. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) A material that could cause injury or death to a person or that damages and pollutes land, air, or water, is a HAZARDOUS material
- 2) A hazardous material is FLAMMABLE if it easily catches fire and can explode.
- 3) After you identify the hazardous materials in your shop, the next step is to PROTECT yourself from them.
- 4) GASOLINE is probably the most flammable and explosive material used in your shop.

True or False — Mark T for True, F for False

- T You should use personal protective equipment any time you work with a hazardous material.
- T The Hazardous Materials Inventory Roster is one way of learning what hazardous materials are used in your shop.
- T Asbestos exposure from brake and clutch maintenance can lead to lung cancer.
- F If you are working with a hazardous material for only a short time, protective equipment is not needed.

Circle the best answer

- 1) Air purifying or filtering respirators should be used when
 - (a) enough oxygen is present
 - b) not enough oxygen is present
 - c) no cartridge is effective
- 2) Eye protection should be worn when working with the following hazardous materials:
 - a) solvent liquids b) aerosol containers
 - c) freon (d) all of the above

TEAR ALONG DOTTED LINE

3) Which of the following are dangerous exhaust gases?

- ☒ a) carbon monoxide b) nitrogen oxides
c) hydrocarbons d) all of the above

4) While using an air purifying respirator, make sure:

- ☒ a) you change cartridges when breathing becomes difficult
b) you inspect the respirator for damage
c) continually adjust it to get a good fit

HANDLING OF HAZARDOUS MATERIALS

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 3: Handling of Hazardous Materials.

Employee

Rolando L. Lora

Date

4/11-93

I am satisfied that the employee, (named above) understands the contents of Module 3.

Shop Manager _____

Date _____

TEAR ALONG DOTTED LINE

Name: Carlos Rosales**HANDLING OF
HAZARDOUS
MATERIALS**

Complete the following exercise for Module 3. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) A material that could cause injury or death to a person or that damages and pollutes land, air, or water, is a Reactive material
- 2) A hazardous material is flammable if it easily catches fire and can explode.
- 3) After you identify the hazardous materials in your shop, the next step is to use personal protective equipment yourself from them.
- 4) GASOLINE is probably the most flammable and explosive material used in your shop.

True or False — Mark T for True, F for False

- T You should use personal protective equipment any time you work with a hazardous material.
- T The Hazardous Materials Inventory Roster is one way of learning what hazardous materials are used in your shop.
- T Asbestos exposure from brake and clutch maintenance can lead to lung cancer.
- F If you are working with a hazardous material for only a short time, protective equipment is not needed.

Circle the best answer

- 1) Air purifying or filtering respirators should be used when
 - a) enough oxygen is present
 - b) not enough oxygen is present
 - c) no cartridge is effective
- 2) Eye protection should be worn when working with the following hazardous materials:
 - a) solvent liquids b) aerosol containers
 - c) freon d) all of the above

3) Which of the following are dangerous exhaust gases?

- a) carbon monoxide b) nitrogen oxides
c) hydrocarbons (d) all of the above

4) While using an air purifying respirator, make sure:

- a) you change cartridges when breathing becomes difficult
- b) you inspect the respirator for damage
- c) continually adjust it to get a good fit

I have reviewed this exercise with my shop manager. I understand the contents of Module 3: Handling of Hazardous Materials.

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 3.

Shop Manager _____ Date _____

Name: Angelina Chua**HANDLING OF
HAZARDOUS
MATERIALS**

Complete the following exercise for Module 3. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) A material that could cause injury or death to a person or that damages and pollutes land, air, or water, is a hazardous material
- 2) A hazardous material is flammable if it easily catches fire and can explode.
- 3) After you identify the hazardous materials in your shop, the next step is to protect yourself from them.
- 4) Gas is probably the most flammable and explosive material used in your shop.

True or False — Mark T for True, F for False

- T You should use personal protective equipment any time you work with a hazardous material.
- T The Hazardous Materials Inventory Roster is one way of learning what hazardous materials are used in your shop.
- T Asbestos exposure from brake and clutch maintenance can lead to lung cancer.
- F If you are working with a hazardous material for only a short time, protective equipment is not needed.

Circle the best answer

- 1) Air purifying or filtering respirators should be used when
 - a) enough oxygen is present
 - b) not enough oxygen is present
 - c) no cartridge is effective
- 2) Eye protection should be worn when working with the following hazardous materials:
 - a) solvent liquids b) aerosol containers
 - c) freon d) all of the above

TEAR ALONG DOTTED LINE



3) Which of the following are dangerous exhaust gases?

- a) carbon monoxide b) nitrogen oxides
c) hydrocarbons d) all of the above

4) While using an air purifying respirator, make sure:

- ☒ a) you change cartridges when breathing becomes difficult
☐ b) you inspect the respirator for damage
☐ c) continually adjust it to get a good fit

HANDLING OF HAZARDOUS MATERIALS

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 3: Handling of Hazardous Materials.

Employee

Angela

Date

4-17-93

I am satisfied that the employee, (named above) understands the contents of Module 3.

Shop Manager

Date

EMPLOYEE TRAINING SIGN-IN SHEET

Today's Date: 4-10-93
Topic Discussed: AUTOMOTIVE REPAIR SHOP
HAZARD
Instructor: _____

EMPLOYEE TRAINING MODULES

(Continued)

EMPLOYEE TRAINING SIGN-IN SHEET

Employee:

- | | |
|-----------------------|-----------|
| 1) <u>[Signature]</u> | 11) _____ |
| 2) <u>[Signature]</u> | 12) _____ |
| 3) <u>[Signature]</u> | 13) _____ |
| 4) _____ | 14) _____ |
| 5) _____ | 15) _____ |
| 6) _____ | 16) _____ |
| 7) _____ | 17) _____ |
| 8) _____ | 18) _____ |
| 9) _____ | 19) _____ |
| 10) _____ | 20) _____ |

Note: Use additional sheets if needed or prepare a sheet that contains the information above.

Name: Angelina Gloria**AUTOMOTIVE
REPAIR SHOP
HAZARDS**

Complete the following exercise for Module 4. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Preventing accidents involves **thinking** safely at all times.
- 2) The first step in preventing accidents is to identify the hazardous operations in your shop.
- 3) Use of hand and power tools is a hazardous operation common to most automotive repair shops.

True or False — Mark T for True, F for False

- T Most personal protective equipment used to handle hazardous materials is also used while performing hazardous operations.
- F Skin and body protection are not needed when performing hazardous operations — only when handling hazardous materials.
- F Good housekeeping has nothing to do with preventing accidents.

Circle the best answer

- 1) Compressed air used for cleaning must be reduced below:
 - a) 5 psi b) 25 psi c) 30 psi
- 2) Compressed air should never be used to:
 - a) power an impact gun b) clean parts or tools
 - c) clean yourself or another worker
- 3) When cutting, drilling, hammering, chiseling or grinding, you should **always**:
 - a) wear gauntlet gloves
 - b) use electric tools with worn power cords
 - c) cut the third prong off the electrical plug
 - d) wear safety glasses or a full face shield

TEAR ALONG DOTTED LINE



(4) When **gas welding** you should:

- a) wear dark lens goggles and a face shield
- b) wear flameproof gloves and clothing
- c) use acetylene with no more than 15 pounds gauge
- d) all of the above

AUTOMOTIVE REPAIR SHOP HAZARDS

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 4: Automotive Repair Shop Hazards.

Employee

Date

4-17-93

I am satisfied that the employee, (named above) understands the contents of Module 4.

Shop Manager

Date

TEAR ALONG DOTTED LINE

Name: _____

Jorge Pacheco**AUTOMOTIVE
REPAIR SHOP
HAZARDS**

Complete the following exercise for Module 4. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Preventing accidents involves **thinking** SAFETY at all times.
- 2) The first step in preventing accidents is to IDENTIFY the hazardous operations in your shop.
- 3) Use of HAND and power tools is a hazardous operation common to most automotive repair shops.

True or False — Mark T for True, F for False

TRUE Most personal protective equipment used to handle hazardous materials is also used while performing hazardous operations.

FALSE Skin and body protection are not needed when performing hazardous operations — only when handling hazardous materials.

FALSE Good housekeeping has nothing to do with preventing accidents.

Circle the best answer

- 1) Compressed air used for cleaning must be reduced below:

a) 5 psi b) 25 psi c) 30 psi

- 2) Compressed air should never be used to:

a) power an impact gun b) clean parts or tools
c) clean yourself or another worker

- 3) When cutting, drilling, hammering, chiseling or grinding, you should **always**:

a) wear gauntlet gloves
b) use electric tools with worn power cords
c) cut the third prong off the electrical plug
d) wear safety glasses or a full face shield

TEAR ALONG DOTTED LINE



4) When **gas welding** you should:

- a) wear dark lens goggles and a face shield
- b) wear flameproof gloves and clothing
- c) use acetylene with no more than 15 pounds gauge
- d) all of the above

AUTOMOTIVE REPAIR SHOP HAZARDS

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 4: Automotive Repair Shop Hazards.

Employee Jorge Pacheco Date 04.28.93

I am satisfied that the employee, (named above) understands the contents of Module 4.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name: Rolando L. Lora**AUTOMOTIVE
REPAIR SHOP
HAZARDS**

Complete the following exercise for Module 4. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Preventing accidents involves **thinking** safety at all times.
- 2) The first step in preventing accidents is to identify the hazardous operations in your shop.
- 3) Use of proper and protective tools is a hazardous operation common to most automotive repair shops.

True or False — Mark T for True, F for False

- T Most personal protective equipment used to handle hazardous materials is also used while performing hazardous operations.
- F Skin and body protection are not needed when performing hazardous operations — only when handling hazardous materials.
- F Good housekeeping has nothing to do with preventing accidents.

Circle the best answer

- 1) Compressed air used for cleaning must be reduced below:
 - a) 5 psi b) 25 psi c) 30 psi
- 2) Compressed air should never be used to:
 - a) power an impact gun b) clean parts or tools
 - c) clean yourself or another worker
- 3) When cutting, drilling, hammering, chiseling or grinding, you should **always**:
 - a) wear gauntlet gloves
 - b) use electric tools with worn power cords
 - c) cut the third prong off the electrical plug
 - d) wear safety glasses or a full face shield

TEAR ALONG DOTTED LINE



4) When **gas welding** you should:

- a) wear dark lens goggles and a face shield
- b) wear flameproof gloves and clothing
- c) use acetylene with no more than 15 pounds gauge
- d) all of the above

**AUTOMOTIVE
REPAIR SHOP
HAZARDS**
(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 4: Automotive Repair Shop Hazards.

Employee Rafaelo L. Lopez Date 4/11/93

I am satisfied that the employee, (named above) understands the contents of Module 4.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name: Carlos Rosales

AUTOMOTIVE REPAIR SHOP HAZARDS

Complete the following exercise for Module 4. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Preventing accidents involves **thinking** SAFETY at all times.
- 2) The first step in preventing accidents is to is A safe work AREA the hazardous operations in your shop.
- 3) Use of hand and power tools is a hazardous operation common to most automotive repair shops.

True or False — Mark T for True, F for False

- T Most personal protective equipment used to handle hazardous materials is also used while performing hazardous operations.
- F Skin and body protection are not needed when performing hazardous operations — only when handling hazardous materials.
- f Good housekeeping has nothing to do with preventing accidents.

Circle the best answer

- 1) Compressed air used for cleaning must be reduced below:
 - a) 5 psi
 - b) 25 psi
 - c) 30 psi
- 2) Compressed air should never be used to:
 - a) power an impact gun
 - b) clean parts or tools
 - c) clean yourself or another worker
- 3) When cutting, drilling, hammering, chiseling or grinding, you should **always:**
 - a) wear gauntlet gloves
 - b) use electric tools with worn power cords
 - c) cut the third prong off the electrical plug
 - d) wear safety glasses or a full face shield

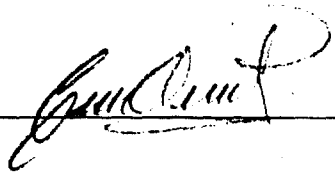


4) When **gas welding** you should:

- a) wear dark lens goggles and a face shield
- b) wear flameproof gloves and clothing
- c) use acetylene with no more than 15 pounds gauge
- ☒ d) all of the above

**AUTOMOTIVE
REPAIR SHOP
HAZARDS**
(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 4: Automotive Repair Shop Hazards.

Employee  Date _____

I am satisfied that the employee, (named above) understands the contents of Module 4.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE



Name: DORA A. DOMINEVEZ

AUTOMOTIVE REPAIR SHOP HAZARDS

Complete the following exercise for Module 4. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Preventing accidents involves **thinking** SAFETY at all times.
- 2) The first step in preventing accidents is to IDENTIFY the hazardous operations in your shop.
- 3) Use of HAND and POWER tools is a hazardous operation common to most automotive repair shops.

True or False — Mark T for True, F for False

- T Most personal protective equipment used to handle hazardous materials is also used while performing hazardous operations.
- F Skin and body protection are not needed when performing hazardous operations — only when handling hazardous materials.
- F Good housekeeping has nothing to do with preventing accidents.

Circle the best answer

- 1) Compressed air used for cleaning must be reduced below:
a) 5 psi b) 25 psi c) 30 psi
- 2) Compressed air should never be used to:
a) power an impact gun b) clean parts or tools
c) clean yourself or another worker
- 3) When cutting, drilling, hammering, chiseling or grinding, you should **always**:
a) wear gauntlet gloves
b) use electric tools with worn power cords
c) cut the third prong off the electrical plug
d) wear safety glasses or a full face shield

TEAR ALONG DOTTED LINE




4) When **gas welding** you should:

- a) wear dark lens goggles and a face shield
- b) wear flameproof gloves and clothing
- c) use acetylene with no more than 15 pounds gauge
- d) all of the above

AUTOMOTIVE REPAIR SHOP HAZARDS

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 4: Automotive Repair Shop Hazards.

Employee  Date _____

I am satisfied that the employee, (named above) understands the contents of Module 4.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

EMPLOYEE TRAINING SIGN-IN SHEET

Today's Date:

4-10-93

Topic Discussed:

Clean up of spill/leak &
Disposal

Instructor:

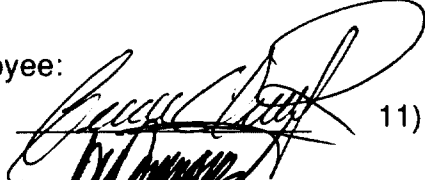

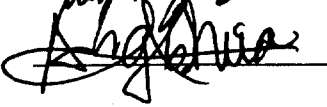
Bill

EMPLOYEE TRAINING MODULES

(Continued)

EMPLOYEE TRAINING SIGN-IN SHEET

Employee:

- | | |
|--|-----------|
| 1)  | 11) _____ |
| 2)  | 12) _____ |
| 3)  | 13) _____ |
| 4) _____ | 14) _____ |
| 5) _____ | 15) _____ |
| 6) _____ | 16) _____ |
| 7) _____ | 17) _____ |
| 8) _____ | 18) _____ |
| 9) _____ | 19) _____ |
| 10) _____ | 20) _____ |

Note: Use additional sheets if needed or prepare a sheet that contains the information above.

Name: Angelina Ghia**CLEAN-UP OF
SPILLS AND
DISPOSAL**

Complete the following exercise for Module 5. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) You must be prepared to handle a spill before it happens.
- 2) The product Labels and MSDS are the best places to start to prepare yourself to handle spills.
- 3) No matter what the spilled material is, notify your shop manager immediately.

True or False — Mark T for True, F for False

False If a spill occurs in your work area it is *not* important to know if the spill is large or small.

True It is important to use the proper absorbents when cleaning up a spill.

True It is illegal to pour hazardous materials down a drain or to wash them into sewers.

True The Resource Conservation Recovery Act makes sure someone is responsible for hazardous waste from the time it is generated until it is disposed of.

Circle the best answer

- 1) Hazardous wastes generated in the automotive repair shop include:

a) waste oil b) batteries and acids c) solvent wastes
d) caustic wastes e) a and b only **f) all of the above**

- 2) There are really only 2 forms of waste disposal that are legal

a) 3 **b) 4** **c) 2** d) none of the above

- 3) Disposal instructions can always be found:

a) on the product label b) on the product MSDS
c) by asking your shop manager **d) both b and c**

4) Your duties in the waste-disposal process include:

- a) placing wastes in proper storage containers
- b) mixing different wastes in the same storage container
- c) using protective equipment only when depositing large amounts of waste

CLEAN-UP OF SPILLS AND DISPOSAL

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 5: Clean-up of Spills and Disposal.

Employee

[Signature]

Date

4-17-92

I am satisfied that the employee, (named above) understands the contents of Module 5.

Shop Manager

Date

TEAR ALONG DOTTED LINE

Name: Rafaela J. Pava**CLEAN-UP OF
SPILLS AND
DISPOSAL**

Complete the following exercise for Module 5. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) You must be prepared to handle a spill IMMEDIATE ACTION happens.
- 2) The product LABEL and MSDS are the best places to start to prepare yourself to handle spills.
- 3) No matter what the spilled material is, notify your shop MANAGER immediately.

True or False — Mark T for True, F for False

- F If a spill occurs in your work area it is *not* important to know if the spill is large or small.
- T It is important to use the proper absorbents when cleaning up a spill.
- T It is illegal to pour hazardous materials down a drain or to wash them into sewers.
- T The Resource Conservation Recovery Act makes sure someone is responsible for hazardous waste from the time it is generated until it is disposed of.

Circle the best answer

- 1) Hazardous wastes generated in the automotive repair shop include:
 - a) waste oil
 - b) batteries and acids
 - c) solvent wastes
 - d) caustic wastes
 - e) a and b only
 - f) all of the above
- 2) There are really only _____ forms of waste disposal that are legal
 - a) 3
 - b) 4
 - c) 2
 - d) none of the above
- 3) Disposal instructions can always be found:
 - a) on the product label
 - b) on the product MSDS
 - c) by asking your shop manager
 - d) both b and c



4) Your duties in the waste-disposal process include:

- a) placing wastes in proper storage containers
- b) mixing different wastes in the same storage container
- c) using protective equipment only when depositing large amounts of waste

CLEAN-UP OF SPILLS AND DISPOSAL

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 5: Clean-up of Spills and Disposal.

Employee Refundo L. Lora Date 4/11/93

I am satisfied that the employee, (named above) understands the contents of Module 5.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name: Charles R. R. R.**CLEAN-UP OF
SPILLS AND
DISPOSAL**

Complete the following exercise for Module 5. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) You must be prepared to handle a spill before it happens.
- 2) The product Solvent and MSDS are the best places to start to prepare yourself to handle spills.
- 3) No matter what the spilled material is, notify your shop Manager immediately.

True or False — Mark T for True, F for False

- F If a spill occurs in your work area it is *not* important to know if the spill is large or small.
- F It is important to use the proper absorbents when cleaning up a spill.
- T It is illegal to pour hazardous materials down a drain or to wash them into sewers.
- T The Resource Conservation Recovery Act makes sure someone is responsible for hazardous waste from the time it is generated until it is disposed of.

Circle the best answer

- 1) Hazardous wastes generated in the automotive repair shop include:
 - a) waste oil b) batteries and acids c) solvent wastes
 - d) caustic wastes a) a and b only f) all of the above
- 2) There are really only two forms of waste disposal that are legal.
 - a) 3 b) 4 c) 2 d) none of the above
- 3) Disposal instructions can always be found:
 - a) on the product label b) on the product MSDS
 - c) by asking your shop manager d) both b and c

TEAR ALONG DOTTED LINE



4) Your duties in the waste-disposal process include:

- a) placing wastes in proper storage containers
- b) mixing different wastes in the same storage container
- c) using protective equipment only when depositing large amounts of waste

CLEAN-UP OF SPILLS AND DISPOSAL

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 5: Clean-up of Spills and Disposal.

Employee *John Smith* Date _____

I am satisfied that the employee, (named above) understands the contents of Module 5.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name:

DORA A. DOMINGUEZ**CLEAN-UP OF
SPILLS AND
DISPOSAL**

Complete the following exercise for Module 5. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) You must be prepared to handle a spill BEFORE it happens.
- 2) The product LABEL and MSDS are the best places to start to prepare yourself to handle spills.
- 3) No matter what the spilled material is, notify your shop MANAGER immediately.

True or False — Mark T for True, F for False

- F If a spill occurs in your work area it is *not* important to know if the spill is large or small.
- T It is important to use the proper absorbents when cleaning up a spill.
- T It is illegal to pour hazardous materials down a drain or to wash them into sewers.
- T The Resource Conservation Recovery Act makes sure someone is responsible for hazardous waste from the time it is generated until it is disposed of.

Circle the best answer

- 1) Hazardous wastes generated in the automotive repair shop include:
 - a) waste oil b) batteries and acids c) solvent wastes
 - d) caustic wastes (e) a and b only f) all of the above
- 2) There are really only TWO forms of waste disposal that are legal
 - a) 3 b) 4 (c) 2 d) none of the above
- 3) Disposal instructions can always be found:
 - a) on the product label b) on the product MSDS
 - c) by asking your shop manager (d) both b and c

4) Your duties in the waste-disposal process include:

- a) placing wastes in proper storage containers
- b) mixing different wastes in the same storage container
- c) using protective equipment only when depositing large amounts of waste

CLEAN-UP OF SPILLS AND DISPOSAL

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 5: Clean-up of Spills and Disposal.

Employee [Signature] Date _____

I am satisfied that the employee, (named above) understands the contents of Module 5.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

EMPLOYEE TRAINING SIGN-IN SHEET

Today's Date: 4-10-93
Topic Discussed: EXPOSURE and FIRST
AID PROCEDURES
Instructor: Bill

EMPLOYEE TRAINING MODULES

(Continued)

EMPLOYEE TRAINING SIGN-IN SHEET

Employee:

- | | |
|-----------------------|-----------|
| 1) <u>[Signature]</u> | 11) _____ |
| 2) <u>[Signature]</u> | 12) _____ |
| 3) <u>[Signature]</u> | 13) _____ |
| 4) _____ | 14) _____ |
| 5) _____ | 15) _____ |
| 6) _____ | 16) _____ |
| 7) _____ | 17) _____ |
| 8) _____ | 18) _____ |
| 9) _____ | 19) _____ |
| 10) _____ | 20) _____ |

Note: Use additional sheets if needed or prepare a sheet that contains the information above.

Name:

Angelina Chia**EXPOSURE AND
FIRST AID
PROCEDURES**

Complete the following exercise for Module 6. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

1) Exposure means: You have to come into contact with a material.

2) Name 3 ways exposure can occur. 1) Eye Contact
Swallowing a material is one way. 2) inhalation
3) skin Contact

3) Serious damage can take place inside your body if a chemical in a hazardous material gets into your bloodstream.

4) What organ does inhalation of hazardous material vapor effect?

Kidney and liver

True or False — Mark T for True, F for False

False you don't have to know what is inside a container before you use it.

False you only need to use protective equipment when you want to.

T Protection requirements can be found on the container label and the product MSDS.

False Every material has the same protective equipment requirements.

Circle the best answer

1) Before using protective equipment you should inspect it for:

- a) tears b) rips c) damaged parts d) all of the above

2) Which of the following really isn't personal protective equipment:

- a) glasses or face shields b) rubber boots c) respirator
d) regular street clothing e) gloves

TEAR ALONG DOTTED LINE



- 3) If you or a co-worker become exposed you should immediately tell:
- a) a doctor **b) your shop manager** c) the police d) your parents
- 4) If a chemical burn results from exposure to a hazardous material you should not:
- a) flush exposed skin with water
 - b) cover the burn with sterile dressing
 - c) flush eyes with water, if exposed
 - d) put ointments on the burn**

EXPOSURE AND FIRST AID PROCEDURES

(Continued)

Match the Type of Exposure in the Left Column With the Correct First-Aid Procedure in the Right

- | | | |
|--------------------------|-------|--|
| A. Inhalation of vapor | _____ | Tell shop manager. Read product label and MSDS. Do or do not induce vomiting. Get medical attention. |
| B. Chemical burn on skin | _____ | Move victim to fresh air. |
| C. Swallowing a material | _____ | Flush exposed area with water for at least 15 min. |

I have reviewed this exercise with my shop manager. I understand the contents of Module 6: Exposure and First Aid Procedures.

Employee Kingston, Ontario Date

I am satisfied that the employee, (named above) understands the contents of Module 6.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name:

Profanado L. Lara**EXPOSURE AND
FIRST AID
PROCEDURES**

Complete the following exercise for Module 6. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Exposure means: You have to come into CONTACT with a material.
- 2) Name 3 ways exposure can occur. 1) EYE CONTACT
Swallowing a material is one way.
2) INHALATION
3) SWALLOWING
- 3) Serious damage can take place inside your body if a chemical in a hazardous material gets into your BODY.
- 4) What organ does inhalation of hazardous material vapor effect?
Respiratory system - LUNGS

True or False — Mark T for True, F for False

- F You don't have to know what is inside a container before you use it.
- F You only need to use protective equipment when you want to.
- T Protection requirements can be found on the container label and the product MSDS.
- T Every material has the same protective equipment requirements.

Circle the best answer

- 1) Before using protective equipment you should inspect it for:
 - a) tears b) rips c) damaged parts (d) all of the above
- 2) Which of the following really isn't personal protective equipment:
 - a) glasses or face shields b) rubber boots c) respirator
 - (d) regular street clothing e) gloves

TEAR ALONG DOTTED LINE



- 3) If you or a co-worker become exposed you should immediately tell:
- a) a doctor **b)** your shop manager c) the police d) your parents
- 4) If a chemical burn results from exposure to a hazardous material you should not:
- a) flush exposed skin with water
 - b) cover the burn with sterile dressing
 - c)** flush eyes with water, if exposed
 - d) put ointments on the burn

EXPOSURE AND FIRST AID PROCEDURES

(Continued)

Match the Type of Exposure in the Left Column With the Correct First-Aid Procedure in the Right

- | | | |
|--------------------------|--------------|--|
| A. Inhalation of vapor | <u> c </u> | Tell shop manager. Read product label and MSDS. Do or do not induce vomiting. Get medical attention. |
| B. Chemical burn on skin | _____ | Move victim to fresh air. |
| C. Swallowing a material | <u> b </u> | Flush exposed area with water for at least 15 min. |

I have reviewed this exercise with my shop manager. I understand the contents of Module 6: Exposure and First-Aid Procedures.

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 6.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name: DORA A. DOMINGUEZ

EXPOSURE AND FIRST AID PROCEDURES

Complete the following exercise for Module 6. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Exposure means: You have to come into c CONTACT with a material.
- 2) Name 3 ways exposure can occur. 1) EYE CONTACT
Swallowing a material is one way. 2) INHALATION
3) SKIN CONTACT
- 3) Serious damage can take place inside your body if a chemical in a hazardous material gets into your bloodstream.
- 4) What organ does inhalation of hazardous material vapor effect?
RESPIRATORY SYSTEM

True or False — Mark T for True, F for False

- F You don't have to know what is inside a container before you use it.
- F You only need to use protective equipment when you want to.
- T Protection requirements can be found on the container label and the product MSDS.
- F Every material has the same protective equipment requirements.

Circle the best answer

- 1) Before using protective equipment you should inspect it for:
 - a) tears b) rips c) damaged parts d) all of the above
- 2) Which of the following really isn't personal protective equipment:
 - a) glasses or face shields b) rubber boots c) respirator
 - d) regular street clothing e) gloves



- 3) If you or a co-worker become exposed you should immediately tell:
- a) a doctor **b)** your shop manager c) the police d) your parents
- 4) If a chemical burn results from exposure to a hazardous material you should not:
- a) flush exposed skin with water
 - b) cover the burn with sterile dressing
 - c) flush eyes with water, if exposed
 - d) put ointments on the burn

EXPOSURE AND FIRST AID PROCEDURES

(Continued)

Match the Type of Exposure in the Left Column With the Correct First-Aid Procedure in the Right

A. Inhalation of vapor

C Tell shop manager. Read product label and MSDS. Do or do not induce vomiting. Get medical attention.

B. Chemical burn on skin

A Move victim to fresh air.

C. Swallowing a material

B Flush exposed area with water for at least 15 min.

I have reviewed this exercise with my shop manager. I understand the contents of Module 6: Exposure and First-Aid Procedures.

Employee

Date

I am satisfied that the employee, (named above) understands the contents of Module 6.

Shop Manager

Date

TEAR ALONG DOTTED LINE

Name: CARLOS ROGALES**EXPOSURE AND
FIRST AID
PROCEDURES**

Complete the following exercise for Module 6. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Exposure means: You have to come into contact with a material.
- 2) Name 3 ways exposure can occur. 1) EYE CONTACT
Swallowing a material is one way. 2) INHALATION
3) SKIN CONTACT
- 3) Serious damage can take place inside your body if a chemical in a hazardous material gets into your body.
- 4) What organ does inhalation of hazardous material vapor effect?
to your health

True or False — Mark T for True, F for False

- F You don't have to know what is inside a container before you use it.
- F You only need to use protective equipment when you want to.
- F Protection requirements can be found on the container label and the product MSDS.
- F Every material has the same protective equipment requirements.

Circle the best answer

- 1) Before using protective equipment you should inspect it for:
 - a) tears b) rips c) damaged parts d) all of the above
- 2) Which of the following really isn't personal protective equipment?
 - a) glasses or face shields b) rubber boots c) respirator
 - d) regular street clothing e) gloves

EMPLOYEE TRAINING SIGN-IN SHEET

Today's Date: 4-10-93
Topic Discussed: FIRE and EXPLOSION
Instructor: Bill

EMPLOYEE TRAINING MODULES

(Continued)

EMPLOYEE TRAINING SIGN-IN SHEET

Employee:

- | | |
|-----------------------|-----------|
| 1) <u>[Signature]</u> | 11) _____ |
| 2) <u>[Signature]</u> | 12) _____ |
| 3) <u>[Signature]</u> | 13) _____ |
| 4) _____ | 14) _____ |
| 5) _____ | 15) _____ |
| 6) _____ | 16) _____ |
| 7) _____ | 17) _____ |
| 8) _____ | 18) _____ |
| 9) _____ | 19) _____ |
| 10) _____ | 20) _____ |

Note: Use additional sheets if needed or prepare a sheet that contains the information above.

Name:

Angelina Bhuia

**FIRE AND
EXPLOSION**

Complete the following exercise for Module 7. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

1) FLAMMABLE means: a material can catch fire easily

2) The basic ingredients for a fire or explosion are:

SOURCE OF IGNITION + AIR + Flammable material

3) To find out if a material is flammable, read the container or the product

M S DS.

True or False — Mark T for True, F for False

+

The FLASH POINT is the *maximum* temperature at which a flammable liquid gives off enough vapors to ignite.

+

The lower the FLASH POINT, the more dangerous the material.

F

You need to memorize the Flash Point of every material you work with.

T

Liquids, solids, and vapors are forms of "FLAMMABLE" materials.

Circle the best answer

1) Fuel in a gas tank is a Vapor form of a combustible material.

a) solid ☒ b) vapor c) liquid d) gas

2) Flames, sparks and tools or equipment that hold high temperatures are:

Source of ignition

a) "COMBUSTIBLE" b) uncontrollable c) related to air
d) SOURCES OF IGNITION



3) When two materials are together can cause explosions.

- a) tightly capped containers
- b) poor ventilation and build-up of vapors
- ☒ c) chemical reactions
- d) both b and c above

FIRE AND EXPLOSION

(Continued)

4) The first thing you should do when you discover a fire is:

- a) use the proper protective equipment
- b) use the nearest fire extinguisher
- ☒ c) tell your shop manager to call the Fire Department
- d) evacuate the area

I have reviewed this exercise with my shop manager. I understand the contents of Module 7: Fire and Explosion.

Employee

[Signature]

Date

4-17-93

I am satisfied that the employee, (named above) understands the contents of Module 7.

Shop Manager

Date

Name:

DORA A. DOMINEVEZ

**FIRE AND
EXPLOSION**

Complete the following exercise for Module 7. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

1) FLAMMABLE means: a material that can catch fire easily

2) The basic ingredients for a fire or explosion are:

SOURCE OF IGNITION + AIR + FLAMMABLE MATERIAL

3) To find out if a material is flammable, read the container or the product

M S DS.

True or False — Mark T for True, F for False

F The FLASH POINT is the *maximum* temperature at which a flammable liquid gives off enough vapors to ignite.

T The lower the FLASH POINT, the more dangerous the material.

F You need to memorize the Flash Point of every material you work with.

T Liquids, solids, and vapors are forms of "FLAMMABLE" materials.

Circle the best answer

1) Fuel in a gas tank is a VAPOR form of a combustible material.

a) solid b) vapor c) liquid d) gas

2) Flames, sparks and tools or equipment that hold high temperatures are:

SOURCES OF IGNITION

a) "COMBUSTIBLE" b) uncontrollable c) related to air
d) SOURCES OF IGNITION

TEAR ALONG DOTTED LINE



3) _____ can cause explosions.

- a) tightly capped containers
- b) poor ventilation and build-up of vapors
- c) chemical reactions
- ☒ d) both b and c above

FIRE AND EXPLOSION

(Continued)

X 4) The first thing you should do when you discover a fire is:

- a) use the proper protective equipment
- ☒ b) use the nearest fire extinguisher
- c) tell your shop manager to call the Fire Department
- d) evacuate the area

I have reviewed this exercise with my shop manager. I understand the contents of Module 7: Fire and Explosion.

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 7.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name:

CARLOS ROSALES

**FIRE AND
EXPLOSION**

Complete the following exercise for Module 7. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

1) FLAMMABLE means: A MATERIAL THAT CAN CATCH FIRE

2) The basic ingredients for a fire or explosion are:

SOURCE OF IGNITION + AIR + FLAMMABLE MATERIAL

3) To find out if a material is flammable, read the container or the product

MS DS.

True or False — Mark T for True, F for FalseF

The FLASH POINT is the *maximum* temperature at which a flammable liquid gives off enough vapors to ignite.

T

The lower the FLASH POINT, the more dangerous the material.

F

You need to memorize the Flash Point of every material you work with.

T

Liquids, solids, and vapors are forms of "FLAMMABLE" materials.

Circle the best answer

1) Fuel in a gas tank is a VAPOR form of a combustible material.

a) solid b) vapor c) liquid d) gas

2) Flames, sparks and tools or equipment that hold high temperatures are:

SOURCES OF IGNITION

a) "COMBUSTIBLE" b) uncontrollable c) related to air

d) SOURCES OF IGNITION



3) _____ can cause explosions.

- a) tightly capped containers
- b) poor ventilation and build-up of vapors
- c) chemical reactions
- ☒ d) both b and c above

4) The first thing you should do when you discover a fire is:

- a) use the proper protective equipment
- ☒ b) use the nearest fire extinguisher
- ☒ c) tell your shop manager to call the Fire Department
- d) evacuate the area

FIRE AND EXPLOSION

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 7: Fire and Explosion.

Employee  Date _____

I am satisfied that the employee, (named above) understands the contents of Module 7.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name: _____

George Pacheco

**FIRE AND
EXPLOSION**

Complete the following exercise for Module 7. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

1) FLAMMABLE means: A MATERIAL that CATCH FIRE easily

2) The basic ingredients for a fire or explosion are:

SOURCE OF IGNITION + AIR + FLAMMABLE MATERIAL

3) To find out if a material is flammable, read the container or the product

MS DS.

True or False — Mark T for True, F for False

False The FLASH POINT is the *maximum* temperature at which a flammable liquid gives off enough vapors to ignite.

True The lower the FLASH POINT, the more dangerous the material.

False You need to memorize the Flash Point of every material you work with.

True Liquids, solids, and vapors are forms of "FLAMMABLE" materials.

Circle the best answer

1) Fuel in a gas tank is a VAPOR form of a combustible material.

a) solid b) vapor c) liquid d) gas

2) Flames, sparks and tools or equipment that hold high temperatures are:

SOURCES OF IGNITION

a) "COMBUSTIBLE" b) uncontrollable c) related to air
d) SOURCES OF IGNITION



3) _____ can cause explosions.

- a) tightly capped containers
- b) poor ventilation and build-up of vapors
- c) chemical reactions
- ☒ d) both b and c above

FIRE AND EXPLOSION

(Continued)

4) The first thing you should do when you discover a fire is:

- a) use the proper protective equipment
- ☒ b) use the nearest fire extinguisher
- c) tell your shop manager to call the Fire Department
- d) evacuate the area

I have reviewed this exercise with my shop manager. I understand the contents of Module 7: Fire and Explosion.

Employee _____

Date _____

07.28.93

I am satisfied that the employee, (named above) understands the contents of Module 7.

Shop Manager _____

Date _____

TEAR ALONG DOTTED LINE

EMPLOYEE TRAINING SIGN-IN SHEET

Today's Date: 4-10-93

Topic Discussed: STORAGE AND MIXING OF
HAZARDOUS MATERIAL

Instructor: Bill

EMPLOYEE TRAINING MODULES

(Continued)

EMPLOYEE TRAINING SIGN-IN SHEET

Employee:

- | | |
|-----------------------|-----------|
| 1) <u>[Signature]</u> | 11) _____ |
| 2) <u>[Signature]</u> | 12) _____ |
| 3) <u>[Signature]</u> | 13) _____ |
| 4) _____ | 14) _____ |
| 5) _____ | 15) _____ |
| 6) _____ | 16) _____ |
| 7) _____ | 17) _____ |
| 8) _____ | 18) _____ |
| 9) _____ | 19) _____ |
| 10) _____ | 20) _____ |

Note: Use additional sheets if needed or prepare a sheet that contains the information above.

Name:

Angelina Ghia

Complete the following exercise for Module 8. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

STORAGE AND MIXING OF HAZARDOUS MATERIALS

Fill in the blanks

1) Storage information can be found on the product container

product label

2) If you're not sure about mixing different materials you should ask your

Shop Manager

3) When mixing hazardous materials you should anticipate

chemical reactions.

True or False — Mark T for True, F for False

F The area you store a material in is not important as long as the container is tightly sealed.

T Storage information can be found on the product label.

F When storing a hazardous material, warning labels are not needed if you will use the material within two weeks.

Circle the best answer

1) Storage information is:

- a) found on the product label
- b) found on the product MSDS
- c) not necessary if the material is in a tightly sealed container
- ☒ d) both a and b above

2) Certain materials must be stored away from:

- a) heat b) cold c) water ☒ d) a, b, and c
- e) fire extinguishers

TEAR ALONG DOTTED LINE

3) When storing compressed gas cylinders they should be secured in up right position at all times.

- a) a leaning b) a lying down (c) an upright

STORAGE AND MIXING OF HAZARDOUS MATERIALS

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 8: Storage and Mixing of Hazardous Materials.

Employee John J. King Date 4/12/57

I am satisfied that the employee, (named above) understands the contents of Module 8.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

Name: DORA A. DOMINGUEZ

Complete the following exercise for Module 8. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

STORAGE AND MIXING OF HAZARDOUS MATERIALS

Fill in the blanks

- 1) Storage information can be found on the product container

MSDS

- 2) If you're not sure about mixing different materials you should ask your

SHOP MANAGER

- 3) When mixing hazardous materials you should anticipate

CHEMICALS reactions

True or False — Mark T for True, F for False

F The area you store a material in is not important as long as the container is tightly sealed.

T Storage information can be found on the product label.

F When storing a hazardous material, warning labels are not needed if you will use the material within two weeks.

Circle the best answer

- 1) Storage information is:

- a) found on the product label
- b) found on the product MSDS
- c) not necessary if the material is in a tightly sealed container
- d) both a and b above

- 2) Certain materials must be stored away from:

- a) heat
- b) cold
- c) water
- d) a, b, and c
- e) fire extinguishers

TEAR ALONG DOTTED LINE



3) When storing compressed gas cylinders they should be secured in
UPRIGHT position at all times.

a) a leaning b) a lying down c) an upright

STORAGE AND MIXING OF HAZARDOUS MATERIALS

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 8: Storage and Mixing of Hazardous Materials.

Employee

Date

4-12-93

I am satisfied that the employee, (named above) understands the contents of Module 8.

Shop Manager

Date

TEAR ALONG DOTTED LINE



Name: CAT200 Reader

STORAGE AND MIXING OF HAZARDOUS MATERIALS

Complete the following exercise for Module 8. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Storage information can be found on the product container
MSDS
- 2) If you're not sure about mixing different materials you should ask your
SHOP MANAGER
- 3) When mixing hazardous materials you should anticipate
CHEMICALS reactions.

True or False — Mark T for True, F for False

- F The area you store a material in is not important as long as the container is tightly sealed.
- T Storage information can be found on the product label.
- F When storing a hazardous material, warning labels are not needed if you will use the material within two weeks.

Circle the best answer

- 1) Storage information is:
 - a) found on the product label
 - b) found on the product MSDS
 - c) not necessary if the material is in a tightly sealed container
 - ☒ d) both a and b above
- 2) Certain materials must be stored away from:
 - a) heat
 - b) cold
 - c) water
 - ☒ d) a, b, and c
 - e) fire extinguishers

TEAR ALONG DOTTED LINE



3) When storing ~~gas~~ gas cylinders they should be secured in V.P.T. 1911 position at all times.

- a) a leaning b) a lying down c) an upright

STORAGE AND MIXING OF HAZARDOUS MATERIALS

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 8: Storage and Mixing of Hazardous Materials.

Employee AT 200 Roshone Date _____

I am satisfied that the employee, (named above) understands the contents of Module 8.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE



Name: Jorge Pacheco

Complete the following exercise for Module 8. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

STORAGE AND MIXING OF HAZARDOUS MATERIALS

Fill in the blanks

- 1) Storage information can be found on the product container
MSDS
- 2) If you're not sure about mixing different materials you should ask your
SHOP MANAGER
- 3) When mixing hazardous materials you should anticipate
CHEMICALS reactions.

True or False — Mark T for True, F for False

- FALSE The area you store a material in is not important as long as the container is tightly sealed.
- TRUE Storage information can be found on the product label.
- FALSE When storing a hazardous material, warning labels are not needed if you will use the material within two weeks.

Circle the best answer

- 1) Storage information is:
a) found on the product label
b) found on the product MSDS
c) not necessary if the material is in a tightly sealed container
d) both a and b above
- 2) Certain materials must be stored away from:
a) heat b) cold c) water d) a, b, and c
e) fire extinguishers

TEAR ALONG DOTTED LINE



3) When storing compressed gas cylinders they should be secured in upright position at all times.

a) a leaning b) a lying down c) ☒ an upright

STORAGE AND MIXING OF HAZARDOUS MATERIALS

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 8: Storage and Mixing of Hazardous Materials.

Employee

George Pacheco

Date

04.28.93

I am satisfied that the employee, (named above) understands the contents of Module 8.

Shop Manager

Date

EMPLOYEE TRAINING SIGN-IN SHEET

Today's Date: _____

Topic Discussed: _____

Instructor: _____

EMPLOYEE TRAINING MODULES

(Continued)

EMPLOYEE TRAINING SIGN-IN SHEET

Employee:

- | | |
|-----------|-----------|
| 1) _____ | 11) _____ |
| 2) _____ | 12) _____ |
| 3) _____ | 13) _____ |
| 4) _____ | 14) _____ |
| 5) _____ | 15) _____ |
| 6) _____ | 16) _____ |
| 7) _____ | 17) _____ |
| 8) _____ | 18) _____ |
| 9) _____ | 19) _____ |
| 10) _____ | 20) _____ |

Note: Use additional sheets if needed or prepare a sheet that contains the information above.

EMPLOYEE TRAINING SIGN-IN SHEET

Today's Date: _____

Topic Discussed: _____

Instructor: _____

EMPLOYEE TRAINING MODULES

(Continued)

EMPLOYEE TRAINING SIGN-IN SHEET

Employee:

- | | |
|-----------|-----------|
| 1) _____ | 11) _____ |
| 2) _____ | 12) _____ |
| 3) _____ | 13) _____ |
| 4) _____ | 14) _____ |
| 5) _____ | 15) _____ |
| 6) _____ | 16) _____ |
| 7) _____ | 17) _____ |
| 8) _____ | 18) _____ |
| 9) _____ | 19) _____ |
| 10) _____ | 20) _____ |

Note: Use additional sheets if needed or prepare a sheet that contains the information above.



Vehicle Maintenance **REPAIR SHOP** Hazardous Materials Program



Employee Training Manual



Safety-Kleen's motto is: "Safety-Kleen is Safety First." Safety-Kleen has a strong regard for your safety because you work with hazardous materials on the job.

There are new laws and regulations requiring employees that work with hazardous materials, be trained about the materials they use and how to protect against their effects.

This booklet contains eight modules that teach you how to deal with the hazardous materials you use on the job every day. Each module covers a different subject.

At the end of each module you will find a short exercise to test your understanding of the material. Your instructor will explain what to do with the exercise once you have completed it.

The exercises in this manual are not a test to see how smart you are. So, please relax — take your time — and try to learn as much as you can. Knowing the proper way to deal with the hazardous materials you work with can save your life.

THE EMPLOYEE'S "RIGHT TO KNOW"



In the past, workers were not always told about the hazardous materials they might come in contact with on the job. In many cases, container labels and warning sheets didn't give enough information about hazardous materials either. Today, new laws and regulations have been made to help keep you safe and healthy on the job. In this module we will look at your rights under the new employee **"Right to Know"** law.

The new law was issued by the Federal Government and "OSHA" — the Occupational Safety and Health Administration. It is called the **Hazard Communication Regulation**, and it effects every company that uses hazardous materials at any time. The regulation states that as an employee:

- You have a **"Right to Know"** what hazards you may face on the job.
- You have a right to be taught about the hazardous materials you may be exposed to at work, and how to protect yourself against them.



- You cannot be fired or discriminated against because you ask for information and training on how to handle the hazardous materials in your workplace.
- You have the right for your doctor or representative to receive the same information.



MODULE

Under this regulation an employer has certain responsibilities to:

- Train employees in the physical and health hazards of the materials in the work area, and teach them what they must do to protect themselves from these hazards.

This includes teaching them what to do in an emergency, and what protective equipment they should use.



- Teach employees how to tell if a hazardous material has been released in the work area.
- Explain container labels and Material Safety Data Sheets, and how to use this hazard information.
- Tell employees which materials in the work area are hazardous, and where these materials are used. (Your shop manager's "Hazardous Material Inventory Roster" will give you this information.)

- Train employees in the details of their shop's "Written Hazard Communication Program." (This program tells how hazard information will be given to employees in your shop, and is located in the front of your shop manager's Material Safety Data Sheet Binder.)

With the new law, everyone will know what information must be provided to keep you safe.



Under the Hazard Communication Regulation, both employees and employers have certain responsibilities.

The employer that uses hazardous materials must:

- Provide a safe work place for employees
- Educate employees about the hazardous materials they will face on the job.
- Recognize, understand, and use warning labels and Material Safety Data Sheets.
- Provide personal protective clothing and equipment, and train employees how to use them.



You, the employee, must:

- Read warning labels and Material Safety Data Sheets and follow the instructions and warnings.
- Ask your shop manager if you have any questions about a hazardous material!



MODULE

Summary

Your employer and the government are making a strong effort to protect you from hazardous materials. But it's really up to you, the employee. As we continue with the remaining modules, you will begin to understand that *you* are the only person that can really keep yourself safe and protected on the job. You can do this by **BEING INFORMED**.

Remember:

- You have certain rights as an employee because you work with hazardous materials.
- Your employer must provide training that teaches you how to deal with the hazardous materials in your workplace.
- Your employer must provide you with a safe workplace.
- Ask your shop manager if you have any questions about a hazardous material.
- As an employee, you have a **"Right to Know,"** but you also have a responsibility to **Keep Yourself Informed**.



**THE EMPLOYEE'S
"RIGHT TO KNOW"**

Name: _____

Complete the following exercise for Module 1. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) The new law issued by the government and OSHA is called the _____ Communication Regulation.
- 2) The new regulation says you have a " _____ to _____ " what hazards you face on the job.
- 3) The employee must read _____ labels and _____ Data Sheets and follow the instructions.

True or False — Mark T for True, F for False

- _____ Only you can really protect your safety on the job.
- _____ You have the right to receive information regarding the hazardous materials you work with.
- _____ Your employer doesn't have to educate you about hazardous materials if he is too busy.
- _____ It is not important to understand warning labels.

Circle the best answer

- 1) If you are in doubt about how to handle a particular hazardous substance ask:
a) your next door neighbor b) your parents
c) your shop manager d) none of the above
- 2) The employer that uses hazardous materials must provide a _____ for his employees.
a) sack lunch b) safe workplace
c) flexible schedule d) all of the above
- 3) The only person that can really keep you safe on the job is:
a) your employer b) the government
c) yourself d) your spouse



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 1: The Employee's "Right to Know."

THE EMPLOYEE'S "RIGHT TO KNOW"

(Continued)

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 1.

Shop Manager _____ Date _____

LEARN ALONG WITH THE LINE

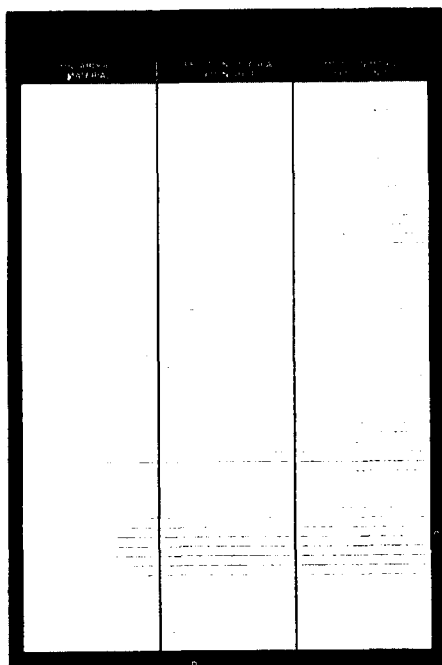
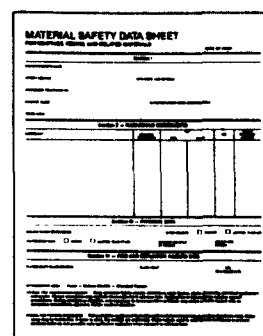
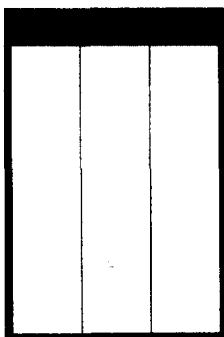
PRODUCT LABELS AND MATERIAL SAFETY DATA SHEETS (MSDS)

There is so much talk about hazardous materials today. But how can you tell what is hazardous and what isn't? This module deals with how and where to get the information about these materials, so that you can protect your health and safety on the job.

There are three different places you can find information about hazardous materials on the job:

- The Hazardous Material Inventory Roster
- The container Warning Label
- The product Material Safety Data Sheet or MSDS

Each source has very important information which you need.



The Hazardous Materials Inventory Roster

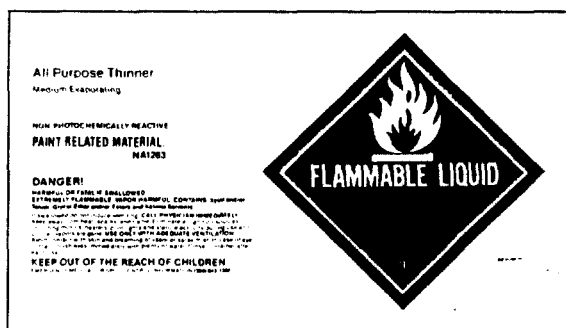
- It lists all hazardous materials used in your shop.
- It tells the area of the shop where the material is used.
- It tells you if your employer has a Material Safety Data Sheet for the material.
- It is filled in and completed by your shop manager.

Get to know the information on the Hazardous Material Inventory Roster posted in your shop. Read it regularly and know what hazardous materials you are using.

2 MODULE

The Container Warning Label

- It appears on the container of the material you are using.
- It is the easiest way to find information about a material you are using.
- It is supplied by the manufacturer of the material.
- It is put there for one reason: **TO HELP PROTECT YOU!** So always read the label.



Each label lists the:

- chemical name
- hazard warnings
- hazardous ingredients
- manufacturer's name and address

There are different types of hazard warnings that appear on labels. The word **CAUTION** means this is the least hazardous type of material. A more hazardous material will have the word **WARNING** on the label. The word **DANGER** on a label means this container holds a very hazardous material.



Warning labels tell you certain information about a material in order to protect your health. A warning label may contain all or only some of the information categories that follow:



BASIC WARNINGS:

Keep away from flames: because it could catch fire or blow up.

Avoid skin contact: This material will harm you if it touches your skin.

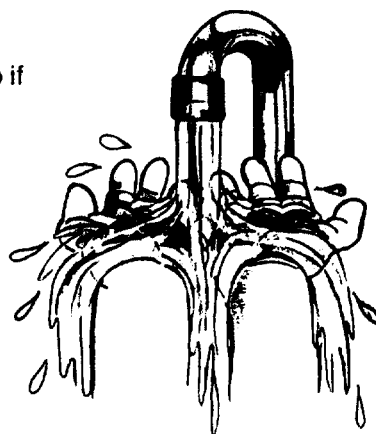
Avoid breathing vapors: Breathing the fumes of this material is harmful to your health.

**FIRE:**

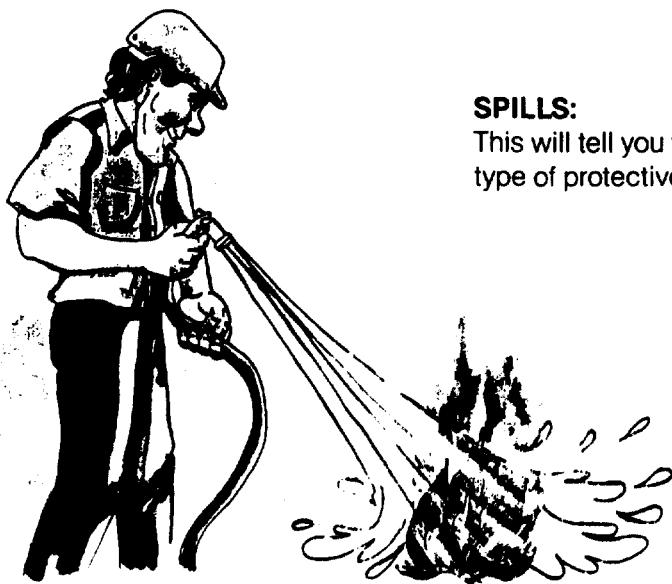
This will tell you what type of fire extinguisher to use in case the material catches fire. Using the wrong type of extinguisher can spread the fire. Certain extinguishers contain water, some foam, and others carbon dioxide.

FIRST AID:

This will explain what to do if the material accidentally touches your skin, or if you breathe the fumes. It may tell you to flush (rinse) your eyes or skin with plenty of water. It may tell you to move to an area where you can breathe fresh air.

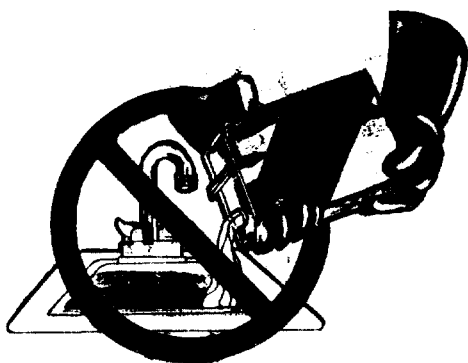
**SPILLS:**

This will tell you what to do if the material is accidentally spilled and what type of protective equipment you must wear when you clean it up.



HANDLING & STORAGE:

This lists the equipment you should wear when handling a hazardous material, such as gloves, safety goggles, or a specific type of respirator. Some materials may need to be stored with extra ventilation or away from other materials.



If a container doesn't have a label:

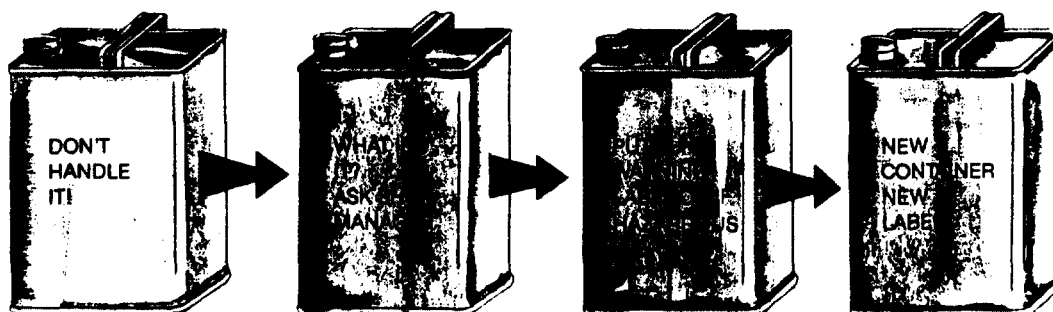
- Don't handle it.
- Find out what the material is from your shop manager.
- Place a warning label on the container if it is hazardous.
- If you must put a hazardous material into a new container, be sure to put a label on the new container.
- Replace torn or unreadable labels with new labels.

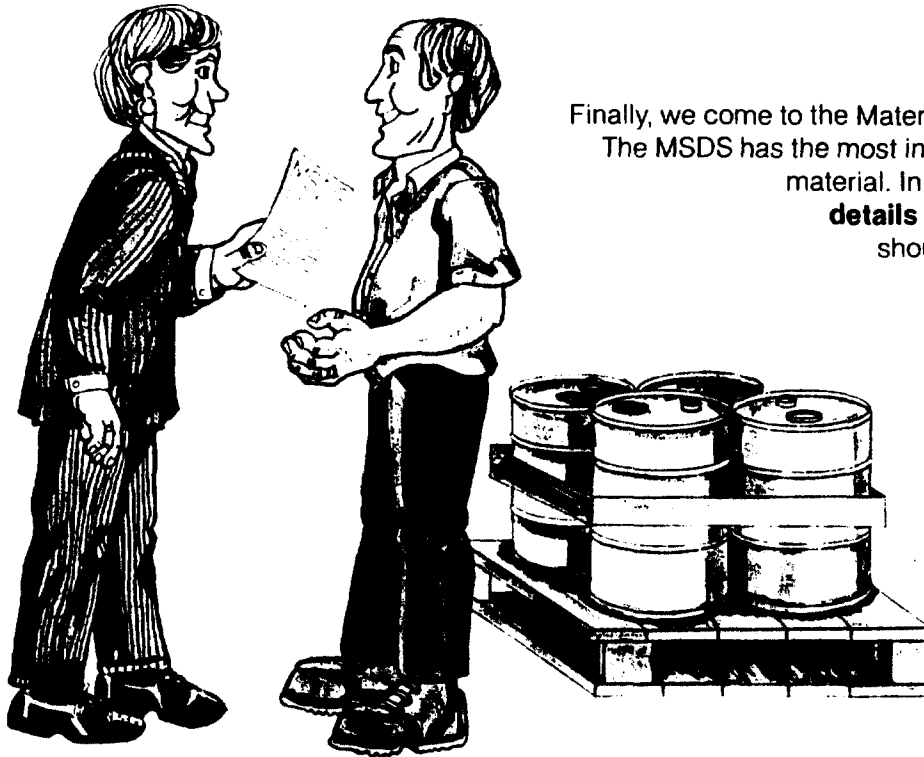
A label doesn't have room to tell you everything you should know about a material, but it is a good place to start.

Protect yourself **before** you handle any material — **READ THE LABEL FIRST!**

DISPOSAL:

This tells you where to dispose of the empty container and unused waste portions of the material.





Finally, we come to the Material Safety Data Sheet or MSDS. The MSDS has the most information about any hazardous material. In fact, **the MSDS gives you the details that don't fit on the label.** You should know who is responsible for giving you MSDS information:

The manufacturer of a hazardous material is required by law to supply a Material Safety Data Sheet with every hazardous material he sells. The MSDS tells all the information the manufacturer knows about a material, and it tells how this material should be handled.

If your shop buys from a distributor, **the distributor** must see that warning labels and Material Safety Data Sheets are supplied with each hazardous material your shop buys.

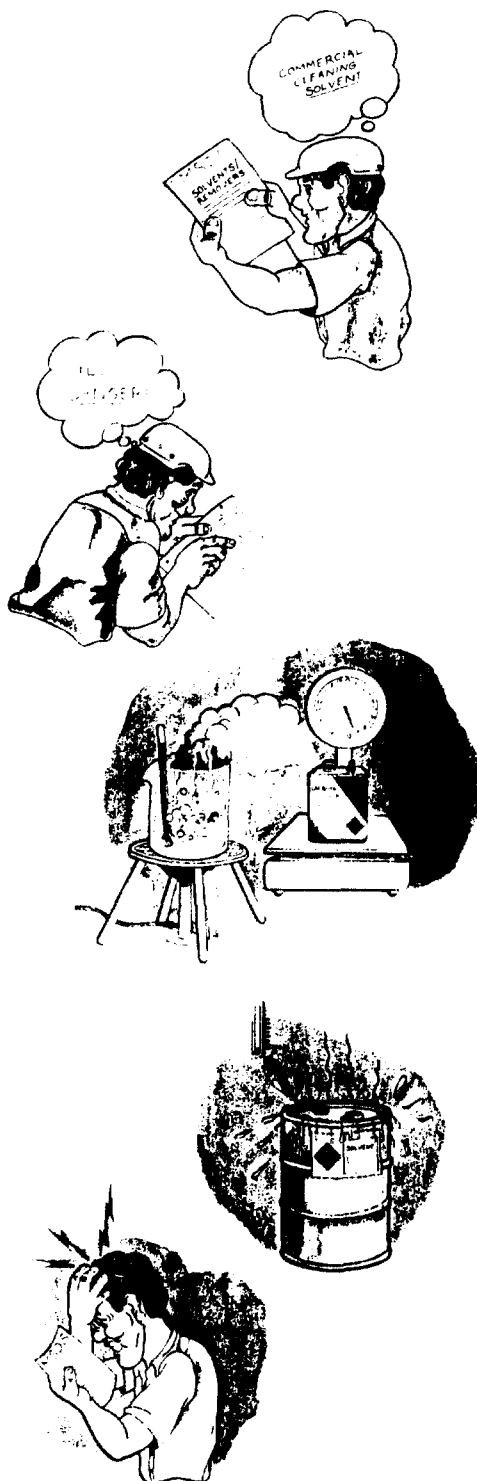
Your employer is required to have an MSDS for every hazardous material you use. This includes caustic solutions, battery acid, crankcase and transmission oil, brake fluid, antifreeze, solvents and freon to name a few.

The Material Safety Data Sheets for each hazardous material your shop uses are located in your shop manager's MSDS binder. The binder is organized into product groups, such as degreasers/corrosives, lubricating fluids, solvents/removers and so on.

Each product group section has a title page explaining the materials in that group.

The sample below shows what you can find out from reading a Material Safety Data Sheet.





CHEMICAL IDENTIFICATION:

This is usually the first section. It lists the chemical name and any trade name. It also lists the manufacturer's name, address, and emergency phone number.

HAZARDOUS INGREDIENTS:

This tells you what's in a chemical that can harm you. It gives you the permissible exposure limit (PEL) or the threshold limit value (TLV).

PHYSICAL DATA:

This describes what the material looks like, smells like, how fast it evaporates, and whether the vapors (fumes) rise or fall in the air.

FIRE AND EXPLOSION DATA:

This tells you at what temperature the material will catch fire or explode. It describes the type of extinguisher and protective equipment to wear if a fire starts.

PERSONAL PROTECTION:

This tells how you might feel if you come into contact with a hazardous material; such as a skin rash, headache, or dizziness. It also tells you what to do in case of emergency, and what kind of first aid to use.

HOW TO USE A MATE

MATERIAL SAFETY DATA SHEET FOR COATINGS, RESINS, AND RELATED MATERIALS

Section I	
MANUFACTURER'S NAME	STREET ADDRESS
CITY AND STATE	ZIP CODE
TELEPHONE	PRODUCT CLASS
TRADE NAME	MANUFACTURER'S
Section II - HAZARDOUS INGREDIENTS	
INGREDIENT	PEL or TLV
Section III - PHYSICAL DATA	
APPEARANCE (Estimated)	
EVAPORATION RATE	SMELL OR THRESHOLD
Section IV - FIRE AND EXPLOSION DATA	
FLAMMABILITY CLASSIFICATION	
EXTINGUISHING MEDIA	
UNUSUAL FIRE AND EXPLOSION HAZARDS	
FIRST AID	

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

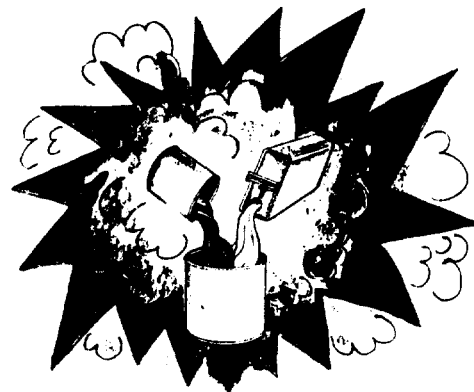
HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

HAZARDOUS INGREDIENTS: List all hazardous ingredients in this section. If the material is a mixture, list the ingredients in descending order of concentration. If the material is a pure substance, list the substance.

SAFETY DATA SHEET

This tells you if the material reacts with other materials or conditions. It lists materials that, when mixed together, will burn or explode. It also tells you about certain conditions like heat or sunlight that may make a chemical unstable, and cause a dangerous reaction, such as fire or explosion.



This tells you what to use to clean up a spill or a leak. It lists the protective equipment to use to protect yourself from the hazardous material you are cleaning up.

**SPECIAL PROTECTION**

This lists the personal protective equipment needed to handle the material safely, such as goggles, a specific type of respirator, rubber gloves, or full coveralls to protect your entire body from exposure to a material.

**SPECIAL PRECAUTIONS**

This tells you any other special instructions to follow when handling the material and gives you information not covered in other parts of the MSDS.



If you have any questions after reading an MSDS, ask your shop manager.

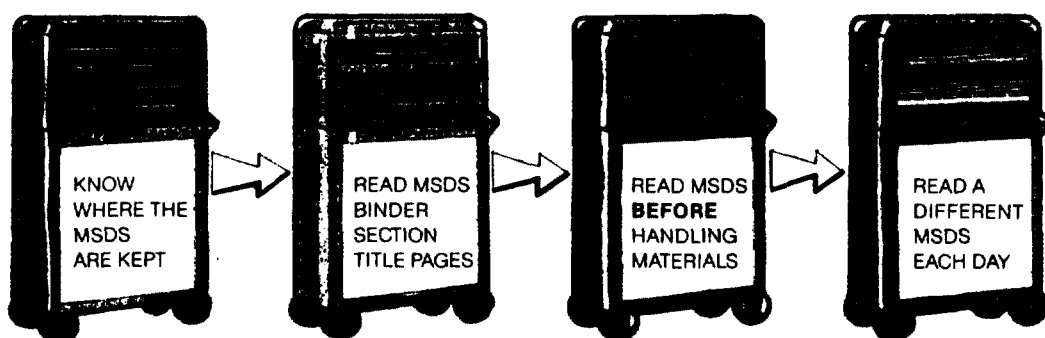
DON'T BE AFRAID TO ASK QUESTIONS

Keep asking until you understand. What you learn could save a life. Maybe your life.



Now that you know how to read an MSDS you're probably wondering how you're going to remember the information for every hazardous material you work with. Here are some tips that will help you:

- Know where the product MSDS are kept.
- Learn all about each product group by reading the product material group — tabbed divider pages in the MSDS binder.
- Read the product MSDS before working with each hazardous material.
- Read a different product MSDS each day. It only takes a few minutes, and it could save your life!
- When reading MSDS's you will notice that many of the hazardous materials you use should be handled in the same ways.



If you have any questions about what certain words mean in the MSDS, like flash point, percent volatile, or incompatibility, turn to the **MSDS Glossary**, located in your shop manager's MSDS Binder, or ask your shop manager.

Summary

The law requires that your employer give you all of the information you will need to handle a hazardous material safely. The information comes to you on **container labels** and **Material Safety Data Sheets**.

When using a hazardous material, remember:

- Always read the **container label** first.
- If your shop does not have a particular MSDS, ask your shop manager to get a copy immediately.
- The **more you know**, the **safer you'll be!**



- Read the product **MSDS**.
- Don't be afraid to **ask questions** if you don't understand something.

Name: _____

Complete the following exercise for Module 2. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) The Hazardous Materials _____ lists all the materials used in your shop.
- 2) MSDS is short for _____
- 3) You should not use a material if the container doesn't have a W _____ label.

True or False — Mark T for True, F for False

- _____ Container labels list *all* of the same information contained in an MSDS.
- _____ If a container doesn't have a label it's safe to handle it if you can guess what it is.
- _____ The MSDS gives you the hazardous material details that don't fit on the label.
- _____ You should always read the container label before using a hazardous material.

Circle the best answer

- 1) If a container doesn't have a label you should:
 - a) not handle it until you know what is inside
 - b) find out what the material is from your employer
 - c) place a label on the container if the contents are hazardous
 - d) all of the above
- 2) Your employer is required to have an MSDS for:
 - a) at least half of the hazardous materials you work with
 - b) the majority of the hazardous materials you work with
 - c) none of the materials you work with
 - d) every hazardous material you work with
- 3) The product MSDS contains:
 - a) chemical identification
 - b) hazardous ingredients
 - c) everything that is known about the particular material

**PRODUCT LABELS
AND MATERIAL
SAFETY DATA
SHEETS**



MODULE

I have reviewed this exercise with my shop manager. I understand the contents of Module 2: Product Labels and Material Safety Data Sheets.

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 2.

Shop Manager _____ Date _____

PRODUCT LABELS AND MATERIAL SAFETY DATA SHEETS (MSDS) (Continued)

TEAR ALONG DOTTED LINE

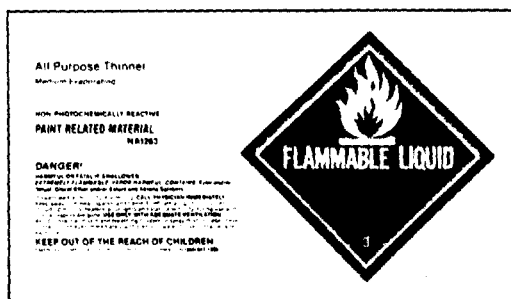
HANDLING OF HAZARDOUS MATERIALS

The automotive repair shop workplace contains many different hazardous materials that are necessary to daily operations. If used correctly, these materials can be very helpful. When handled carelessly, they can cause severe injury, illness or death. Getting to know the hazardous materials you work with and how to handle them is the subject of this module.

A HAZARDOUS MATERIAL is a material that could cause injury or death to a person, or could damage and pollute land, air or water.

So...how can you tell if a material is hazardous or not?

The easiest way is to first check the "Hazardous Materials Inventory Roster" posted in your shop. If you are still not sure about it, or if the material is not listed:



READ THE PRODUCT LABEL.

If the label lists any of the properties below, the material is considered hazardous:

FLAMMABLE — This means it will easily catch on fire or can explode.

CORROSIVE — This means the material is so strong it can dissolve metals, and it can burn skin and eyes.

REACTIVE — The material will become unstable (it will burn, explode, or give off toxic vapors) if it is mixed with air, water, heat, or other materials.

TOXIC — Will cause illness or death after being inhaled, or after it comes in contact with your skin.

For more detailed information about a hazardous material, read the product Material Safety Data Sheet.

Note: The manufacturer only prepares MSDS for materials that are considered hazardous.



Most automotive repair shops use the following hazardous materials:

- Degreasers/corrosives — solutions used to remove baked on grime from parts and sulfuric acid used in batteries.
 - Lubricating fluids — crankcase oil, transmission oil, valve grinding coolant — wheel bearing and C.V. joint grease.
 - Hydraulic/cooling fluids — brake fluid, power steering fluid, automatic transmission fluid, and antifreeze for cooling.
 - Compressed gases — used in gas welding and freon used in air conditioning systems.
 - Solvents/removers — liquids used to dissolve another substance.
 - Adhesives — to attach and repair parts.
 - Fuels — For powering vehicles.
 - Paint products — enamel aerosols and undercoating products for painting parts and protecting the vehicle undercarriage.
 - Asbestos — dust from brake and clutch assembly overhaul.
 - Exhaust gases — exiting the vehicle tail-pipe.
- Each of these materials has at least one of the hazardous properties listed above.



After you have identified the hazardous materials in your shop, the next step is to protect yourself from them.

To protect yourself from hazardous materials you must use **"personal protective equipment"**. Your employer must pay for the cost of the protective equipment, and train you in its use. If you wish to use a different type of equipment than your employer has supplied for you, you may have to pay the difference in cost, if any.



There are different types of protective equipment for handling hazardous materials, including:

LUNG/RESPIRATORY SYSTEM PROTECTION — two types of respirators.

EYE PROTECTION — glasses, goggles, face shields

SKIN/BODY PROTECTION — gloves, safety shoes, protective suits, aprons, boots.

Look at the container label and the product MSDS under the "Special Information" section to find out what protection you need for the material you are using.

When should you use personal protective equipment?
ANY TIME YOU WORK WITH A "HAZARDOUS MATERIAL."

Don't take chances... even if you know that you will only be working with a material for a short time. Take a few minutes to use the proper protection so you won't regret an accident that could have been prevented.

USE THE RECOMMENDED PROTECTION.



LUNG/RESPIRATORY PROTECTION

Sometimes you can't see or smell it, but certain dusts, vapors, and fumes in the air can be real hazards. When these materials float around in the air, they are called "airborne particles." There are different types of materials that may become airborne in your shop:



OPERATION

welding metals and coated surfaces

grinding metals and painted surfaces

brake maintenance, strut repair, clutch assembly, exhaust manifold gaskets

spray paint, undercoating, epoxies, adhesives

cleaning and degreasing

diagnosis and tune-up

AIRBORNE PARTICLES

dangerous fumes

rust, paint, metal dust

asbestos particles

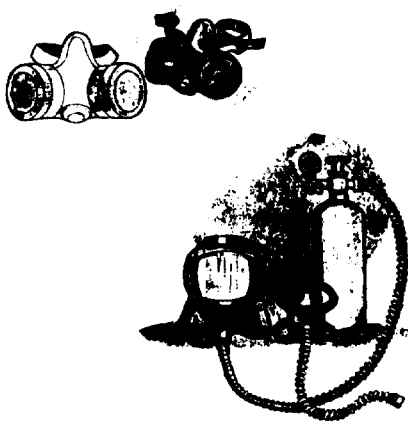
evaporation of vapors

solvent vapors

exhaust gases

Each of the airborne particles listed above can damage your lungs if inhaled. Breathing certain airborne particles can severely damage your lungs, and may lead to certain types of cancer. For most airborne particles in your shop, making sure your work area has **good ventilation that directs the particles away from you** is the easiest way of protecting yourself from inhaling dangerous airborne materials.

In a few cases a respirator may be required to properly protect yourself. Respirators are usually classified for use depending on how much oxygen is present in the work area.



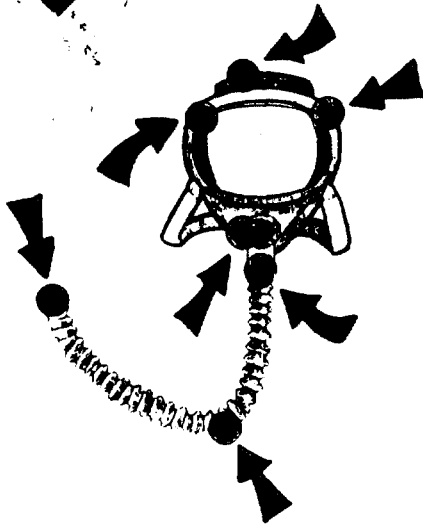
There are two basic types of respirators:

1) Air purifying or filtering respirators:

- This type is used when there is enough oxygen present (19.5%), but the oxygen contains hazardous gases, vapors, or dusts.
- Color coded replaceable cartridges are used. Be sure to use the right cartridge and replace it when breathing becomes difficult.

2) Air supplying respirators:

- These are used when there is not enough oxygen for you to breathe.
- They are also used when cartridge type respirators are not effective.
- These respirators usually have a face mask with an air line or a portable air bottle like a scuba tank.



You must use the right kind of respirator for each different hazard
Using the wrong respirator could KILL you.

- Read the product label and MSDS to know which respirator to use.
- If you are still in doubt, ask your shop manager.
- Always use a "NIOSH approved" respirator designed to protect against the material you are working with.

Before using any respirator, make sure you:

- Know how to use it.
- Inspect the respirator for cracks, tears, and holes that could let in contaminants (airborne particles or vapors).
- Check all connections and fittings.

And above all **YOU MUST GET A GOOD RESPIRATOR FIT.**

If the respirator doesn't fit properly on your face, contaminants could leak in. If your respirator just doesn't fit well, tell your shop manager, and don't use that respirator.



During use make sure:

- You change cartridges when breathing becomes difficult.
- You always know how much air you have left when using a separate air supply tank.
- If breathing becomes difficult, or if you can smell, taste or feel that a contaminant is leaking in, move to a safe area **fast**.

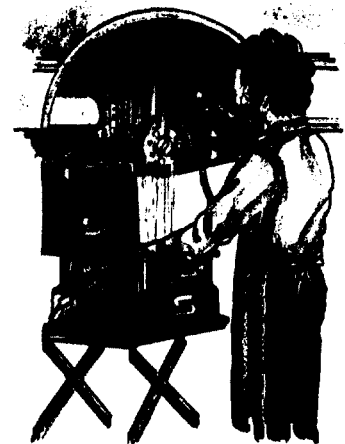
After use make sure:

- You inspect the respirator for any damage.
- You clean and disinfect the respirator.
- You store the respirator in an un-contaminated area, away from heat, cold, dust, and light.

Note: Although "air supplied" respirators are not used in most automotive repair shops today, new regulations may require their use for some operations in the near future.

ASBESTOS

Asbestos has been identified as a major cause of lung disease in workers that are exposed to asbestos fibers. When performing operations that involve asbestos like brake and clutch maintenance, or scraping off asbestos exhaust manifold gaskets, make sure the particles are not allowed to become airborne. **Do not use compressed air hoses to remove asbestos from parts.** Cartridge type respirators specifically designed to protect against asbestos exposure are highly recommended. Safety-Kleen's Multi-Level Parts Cleaner can be dedicated for use in capturing asbestos fibers during brake and clutch replacement service.





EXHAUST GASES

Carbon Monoxide (CO) and Nitrogen Oxides (NOx) are gases that exit the vehicle tailpipe. Both of these gases are toxic in very small doses. Carbon Monoxide can kill you by taking the place of oxygen in your blood. Nitrogen Oxides affect your health over a longer period of time. Evidence also suggests that hydrocarbons (HC), diesel soot, and even gasoline vapors are possible causes of lung cancer.

To minimize exposure to these deadly gases, use an exhaust ventilation system that attaches to the vehicle tailpipe or use a floor fan to direct the gases away from the service bay work area.

EYE PROTECTION

When working with a hazardous material it is important to prevent that material from being sprayed or splashed into your eyes.

To prevent contact with your eyes, safety glasses with side shields or a full face shield must be used.

If you normally wear glasses on the job, be sure to get a pair of prescription **industrial safety glasses**.

Always wear eye protection when working with solvent liquids, aerosol containers and especially freon. Freon can freeze an eyeball in seconds and can also cause instant frostbite.



SKIN/BODY PROTECTION

You already know that your eyes and lungs need protection from hazardous materials, but what about your skin and the rest of your body?

- Safety shoes and boots don't only prevent serious foot injuries from falling objects, they also protect against hazardous liquids.
- Special gloves should be used when handling hazardous liquids like solvents, sulfuric acid for batteries, and most automotive fluids—especially used fluids. Skin contact with used crankcase oil should be prevented and solvent should never be used to clean skin.
- Proper protective suits and aprons protect your clothes, skin, and body from hazardous materials. Using a high pressure steam cleaner with a caustic liquid or detergent to remove dirt and grime from vehicle parts and undercarriages is one example of when protective clothing is necessary.



BATTERY MAINTENANCE

During the battery charging process flammable gases are produced that can explode. Charging areas should be well ventilated and free of ignition sources. Safety glasses or face shields must be worn when working with a battery or handling sulfuric acid. Sulfuric acid can cause permanent eye damage and serious skin irritation.



GASOLINE

Gasoline is probably the most flammable and explosive material you are exposed to in your shop.

When changing fuel filters or performing carburetor or fuel injection work:

- Remove all ignition sources from the area.
- Do not smoke.**
- Avoid releasing fuel onto hot engine or exhaust systems.
- Release fuel pressure slowly from fuel injection systems.
- Don't use gasoline for cleaning parts.
- Avoid skin contact and wear protective eyewear.



ANTIFREEZE

Antifreeze when hot is usually under very high pressure. If released suddenly it can spray over a large area and cause severe burns. Allow vehicle engines to cool down before removing the radiator cap or draining antifreeze. Always remember to wear protection on face, eyes, and skin.

Summary

Handling hazardous materials doesn't have to be dangerous if you use the proper protective equipment and know about the materials you are handling.

To properly handle a hazardous material, you need to:



- know the correct personal protective equipment needed when working with a hazardous material by reading the container label and the product MSDS.

- know what the material is.
- know the hazardous properties of the material.



- make sure that the protective equipment you are using fits you and that it works properly.



Name: _____

HANDLING OF HAZARDOUS MATERIALS

Complete the following exercise for Module 3. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) A material that could cause injury or death to a person or that damages and pollutes land, air, or water, is a _____ material
- 2) A hazardous material is _____ if it easily catches fire and can explode.
- 3) After you identify the hazardous materials in your shop, the next step is to _____ yourself from them.
- 4) _____ is probably the most flammable and explosive material used in your shop.

True or False — Mark T for True, F for False

- _____ You should use personal protective equipment any time you work with a hazardous material.
- _____ The Hazardous Materials Inventory Roster is one way of learning what hazardous materials are used in your shop.
- _____ Asbestos exposure from brake and clutch maintenance can lead to lung cancer.
- _____ If you are working with a hazardous material for only a short time, protective equipment is not needed.

Circle the best answer

- 1) Air purifying or filtering respirators should be used when
 - a) enough oxygen is present
 - b) not enough oxygen is present
 - c) no cartridge is effective
- 2) Eye protection should be worn when working with the following hazardous materials:
 - a) solvent liquids b) aerosol containers
 - c) freon d) all of the above

**HANDLING OF
HAZARDOUS
MATERIALS****(Continued)**

3) Which of the following are dangerous exhaust gases?

- a) carbon monoxide b) nitrogen oxides
c) hydrocarbons d) all of the above

4) While using an air purifying respirator, make sure:

- a) you change cartridges when breathing becomes difficult
b) you inspect the respirator for damage
c) continually adjust it to get a good fit

I have reviewed this exercise with my shop manager. I understand the contents of Module 3: Handling of Hazardous Materials.

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 3.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

AUTOMOTIVE REPAIR SHOP HAZARDS



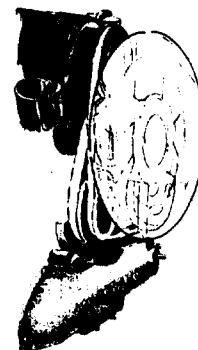
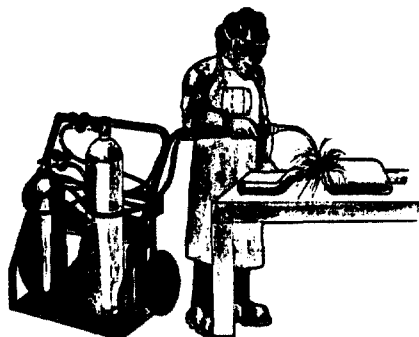
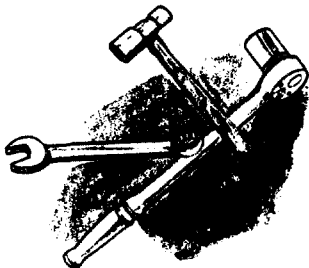
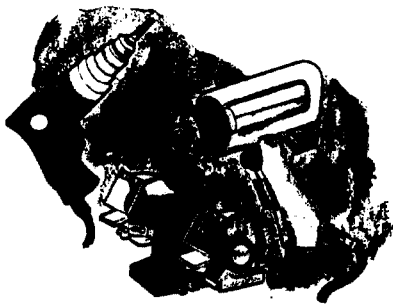
In addition to the hazardous materials used in your shop, there are also many hazardous operations. One of the most effective tools for preventing accidents that result from these operations is to use common sense and to **"Think Safety"** at all times.

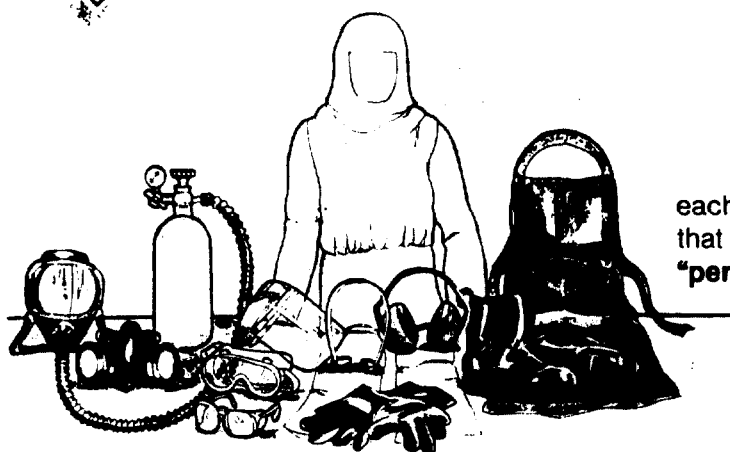
In this module we will look at the hazardous operations that are common to most automotive repair shops and learn how accidents can be prevented.

The first step in preventing accidents caused by hazardous operations is to identify the operations in your shop that could threaten your safety.

Hazardous operations that are common to most automotive repair shops include:

- Use of hand and power tools.
- Welding repairs
- Use of hydraulic devices that involve extreme pressure.
- Operations that involve rotating parts.
- Operations that produce high noise levels.
- Operations that involve lifting heavy objects.





Like the hazardous materials we discussed in Module 3, each of the hazardous operations in your shop will require that you take special precautions or use **"personal protective equipment"** or both.

Most of the personal protective equipment you use to handle hazardous materials will also be used while performing hazardous operations:

FOOT PROTECTION

Safety shoes and boots will prevent foot injuries caused by falling objects and prevent falls on slippery surfaces.



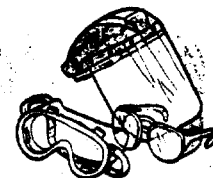
HAND AND ARM PROTECTION

There are special gloves for almost every job:

- for handling glass, plastic, or jagged metal
- for handling hot surfaces when welding or when working on a hot engine or exhaust system.

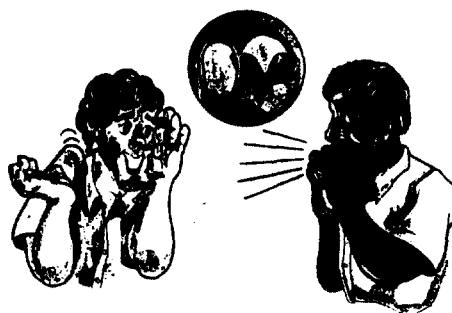
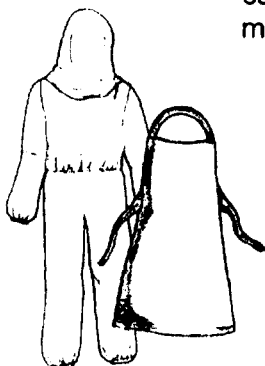
EYE AND FACE PROTECTION

- Flying particles and objects, sparks, glare, and intense light all require slightly different protection.
- Remember: If you normally wear glasses on the job, be sure to get a pair of prescription **industrial safety glasses**.



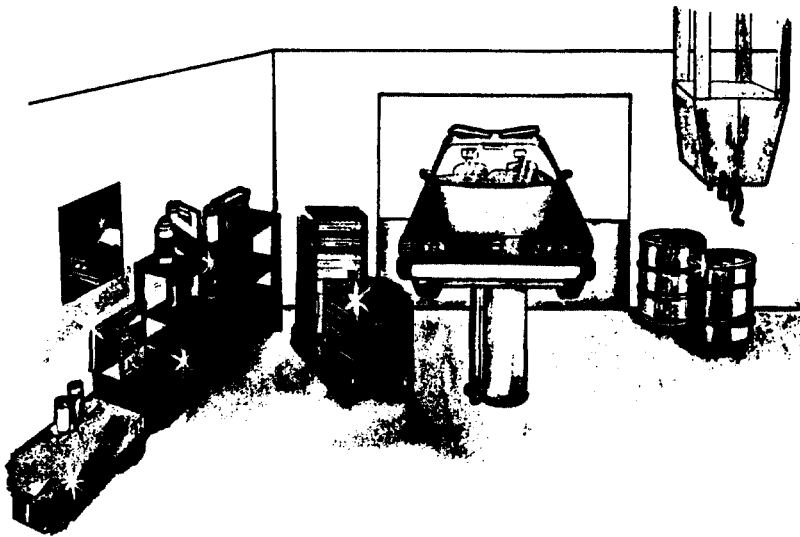
EAR PROTECTION

If you are around loud noises for a long time, permanent damage to your hearing can result. The use of ear plugs or ear muffs can prevent hearing loss.



SKIN/BODY PROTECTION

Proper protective suits and aprons protect your clothes, skin and body from flying particles and objects, sparks, flames and extreme hot and cold surfaces.

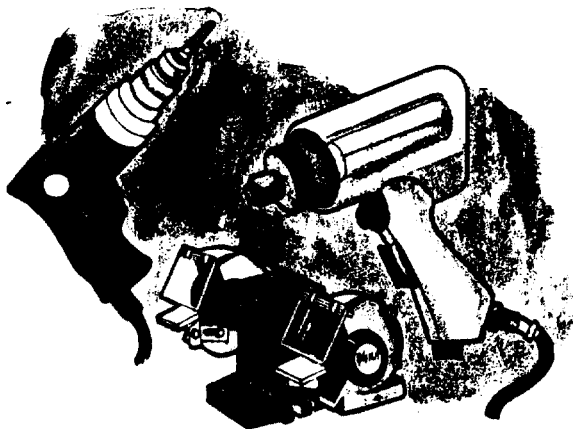


Let's look at hazardous operations and shop safety more closely.

HOUSEKEEPING

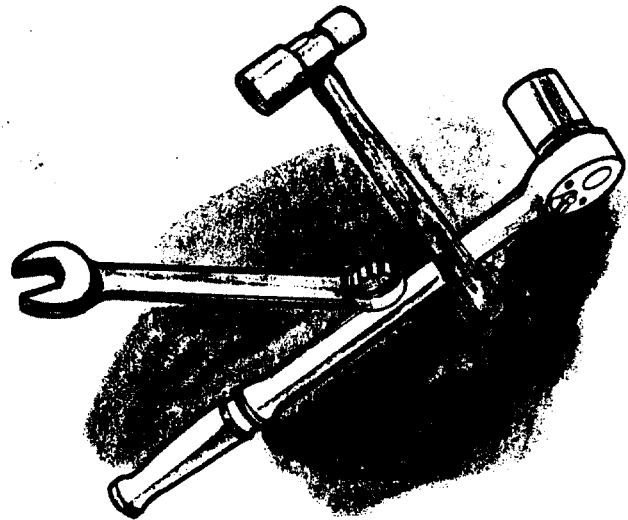
Good housekeeping is an easy way to prevent accidents. Put junk parts in the right place after removal. The same goes for tools you are finished using. Remove these objects from your work area to prevent tripping over them. Slippery floors caused by spilled oil, grease, gasoline and water are among the most common causes of accidents in the automotive industry. Make sure you sweep your stall and clean up all spills after each job

is completed or more often if necessary. A clean and uncluttered work area is a **safe** work area.



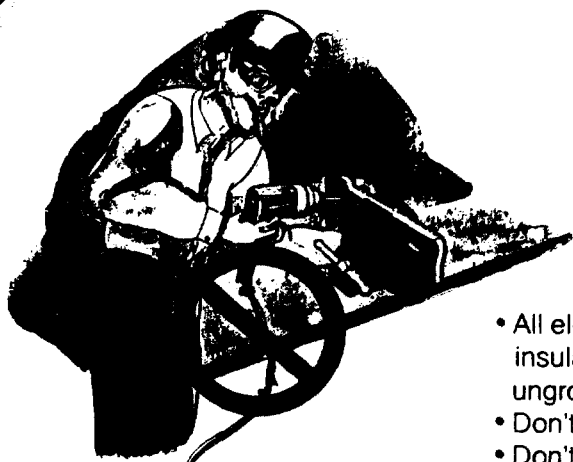
HAND AND POWER TOOLS

There are many kinds of hand tools in your shop that are either powered or manual. Most powered tools use electric or pneumatic energy (driven by air pressure) as a power source. All of these tools were designed to save time while making your job easier — but most of them can be dangerous if not operated correctly. To protect your safety, follow these rules when using hand and power tools:



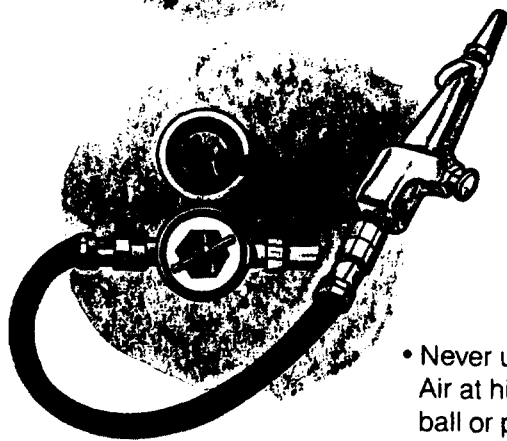
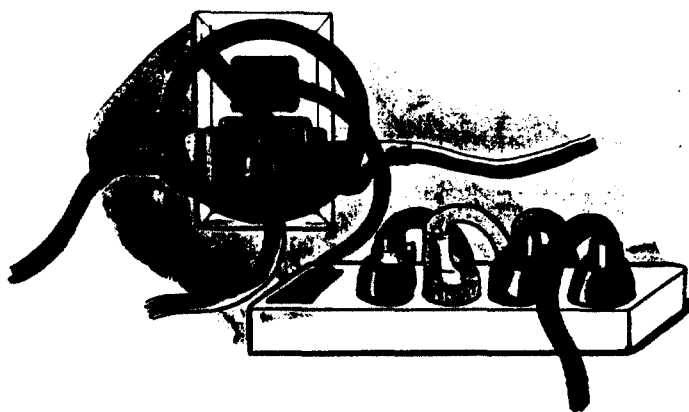
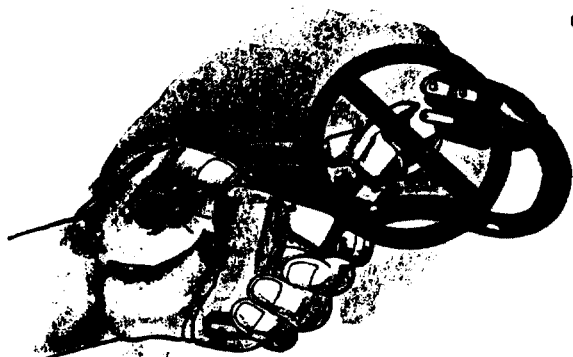
ALL HAND AND POWER TOOLS

Choose the right tool for the job. Know what the tool can and can't do and know how to properly use the tool.



ELECTRIC POWER TOOLS — PREVENT ELECTROCUTION

- Make sure you remove adjusting keys and wrenches before turning the power on.
- Never use electric tools that have worn power cords.
- All electric tools must have a ground connection or be double-insulated. Don't cut the third prong off the plug or use an ungrounded adapter so you can use a two prong plug.
- Don't drag cords through liquid spills.
- Don't overload outlets with too many extension cords and keep cords out of walkways to prevent tripping.



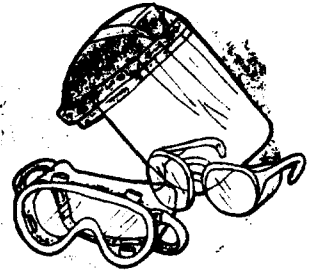
PNEUMATIC POWER TOOLS — PREVENT COMPRESSED AIR INJURIES

- Don't use compressed air hoses that are cracked or worn. Inspect these hoses regularly for damage and replace defective hoses immediately.
- Never use compressed air to clean yourself or another worker. Air at high pressure can break an ear drum, blow out an eye ball or penetrate the skin, injecting air into the blood that can cause death.
- Compressed air used for cleaning must be reduced below 30 psi.
- Never use sockets or extensions with an impact gun that were not designed for that purpose. Non-impact tools will come apart even when used with the least powerful impact gun or ratchet.



When using hand or power tools for **cutting, drilling, hammering, chiseling, grinding, and removing and installing parts**, make sure you:

- Always wear safety glasses or a full face shield.
- Use the guard or safety device the manufacturer has designed into the tool. Grinding wheels for example should have protection hoods in case a wheel breaks and work rests should be secured no more than 1/8" from the wheel. This keeps fingers and the work piece from jamming between the wheel and work rest.
- Remove rings, watches, jewelry, and loose clothing. Long hair should also be kept away from the moving parts of power tools.



WELDING

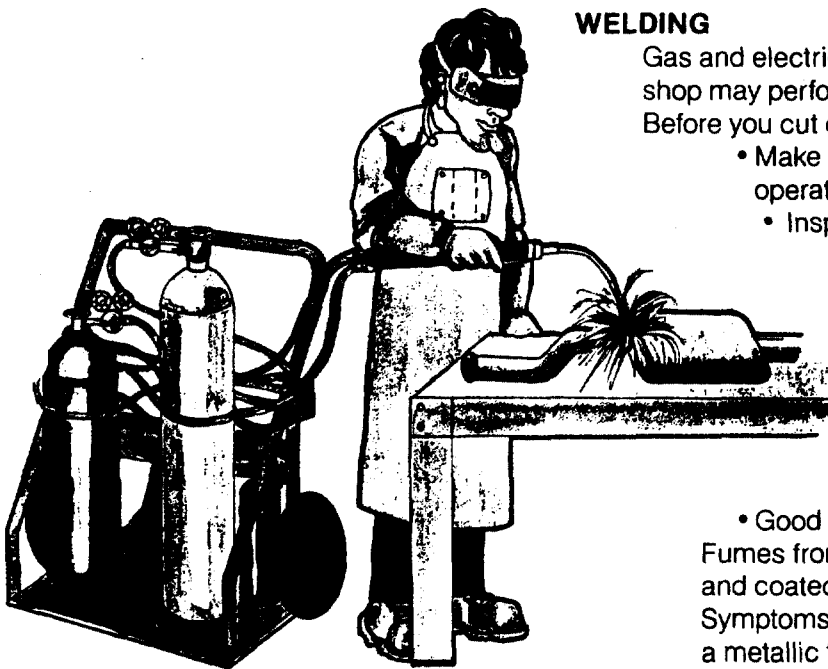
Gas and electric arc welding are two types of welding your shop may perform.

Before you cut or weld:

- Make sure you have been trained in the safe operation of the equipment.
- Inspect all equipment regularly and replace leaking or burnt gas hoses, damaged electrical cables and connectors, and valves that may be malfunctioning.
- Don't weld or cut near flammable liquids or vapors, gas tanks, oil barrels, or solvent tanks.
- Have a fire extinguisher located near the welding area.

- Good ventilation is very important during welding.

Fumes from metals such as cadmium, copper, nickel, zinc and coated surfaces can produce "metal fume fever." Symptoms from exposure include fever, chills, nausea, and a metallic taste in the mouth. Repeated exposure has been linked to lung cancer.



When ARC WELDING:

- Wear a welding helmet with a dark lens shade. Eye exposure to arc ultraviolet radiation can result in actual burns to the eye. Repeated exposure may cause permanent eye injury.
- When doing a heavy job, flameproof gauntlet gloves, fire resistant leggings and flameproof aprons should be worn.
- Use mineral wool to prevent sparks from entering your ears.
- To avoid electrical shock, check all connections, ground the workpiece, and don't weld in wet locations.

When GAS WELDING:

- Wear dark lens goggles and a face shield.
- Wear flameproof gloves and clothing to protect your body and skin.
- Don't use acetylene with the tank pressure more than fifteen pounds gauge.
- Shut tank valves off tightly when not in use.



MODULE

HYDRAULIC JACKS, LIFTS, PRESSES — PULLERS AND VICES

Jacks: Never work around a vehicle that is supported only by hydraulic floor jacks. Always use jackstands or other supports to prevent the vehicle from falling if the jack fails.



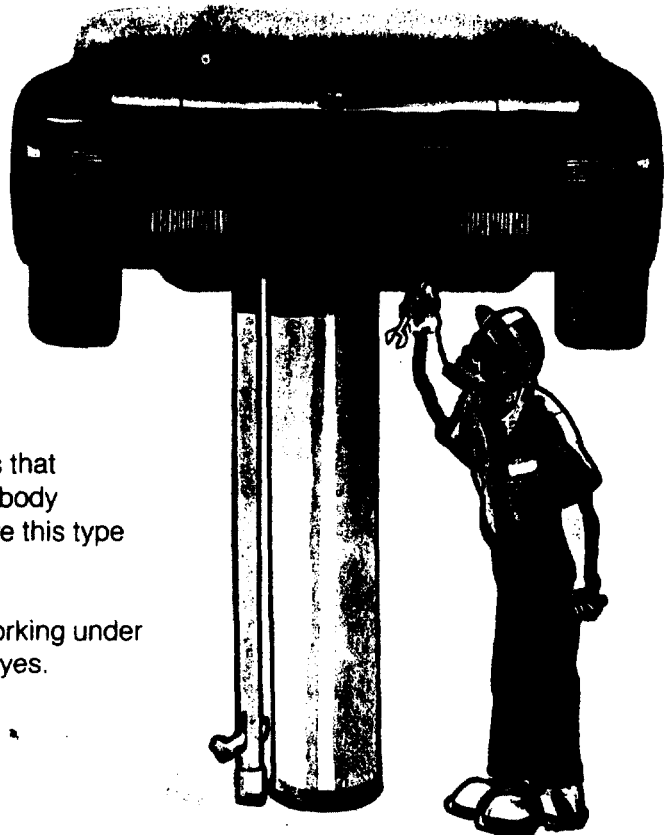
Lifts: The vehicle load should be resting squarely on the lift. Know the load limits of your lift and don't exceed them. Raise the vehicle one foot off the ground and check for stability before raising the vehicle the rest of the way. All lifts should be equipped with a mechanical locking device.

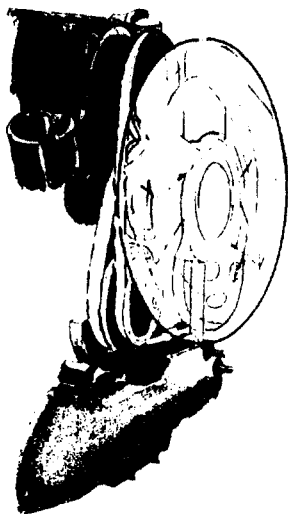
If the lift:

- jerks or jumps when raised
 - slowly settles or rises after being raised or lowered
 - comes down very slowly
 - blows oil out of the exhaust or packing nut
- ... tell your shop manager immediately and don't use that lift until it has been properly checked.

Hydraulic Presses — Pullers and Vices are all devices that involve high pressure. Make sure adequate eye, face and body protection is used when performing operations that involve this type of equipment.

It is also a very good idea to wear eye protection while working under a vehicle to keep road grime and leaking fluid out of the eyes.





ROTATING PARTS

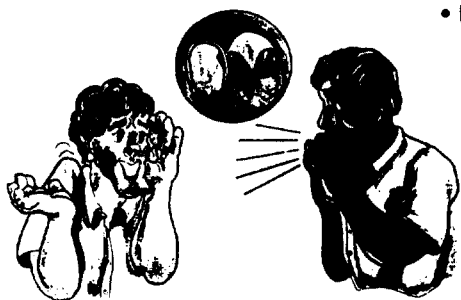
Fans, belts, pulleys, and driveshafts on the vehicle and drill presses, brake lathes, wheel balancers and valve grinding machines in the shop all involve rotating parts that are dangerous.

As we mentioned with hand and power tools, rings, jewelry, loose clothing and long hair can get caught in these devices and pull you right into the moving parts. Next time, stand to one side of a fan or pulley out of range of the spinning part while performing your work.

NOISE

In a typical service bay the whirr of an impact wrench or pneumatic drill, the buzz of a power grinder, or the racket caused by some engine fans and exhaust systems are loud noises that over time can lead to permanent hearing loss. If the noises in your shop are so loud that you must raise your voice to talk with someone five feet away, you need ear protection.

- Use ear plugs or ear muffs that are properly fitted; one size does not fit everyone.
- Keep your ear protection clean by washing it in warm soapy water.
- Ear protection blocks out noise around you so you can hear the sounds you need to hear.



PROTECTING YOUR BACK

Back problems are one of the leading hazards automotive service technicians face. Leaning over a fender all day and lifting heavy objects like cylinder heads, engines, transmissions, and even tires can strain the strongest backs.

- Use your legs, not your back, when lifting heavy objects.
- Ask for help anytime someone is available, even for light weight items.
- Use your elbows for support when working under the hood.
- Wearing work shoes with a cushioned, gasoline resistant non-slip sole will prevent back and leg strain that results from standing for hours on a concrete floor.

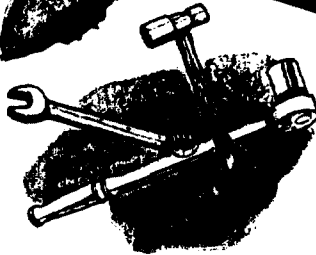
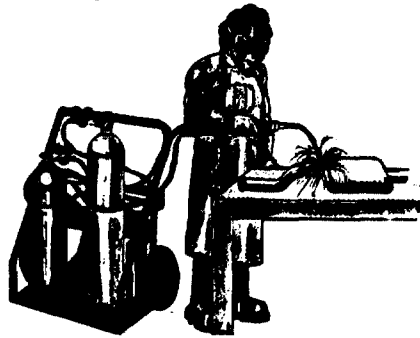
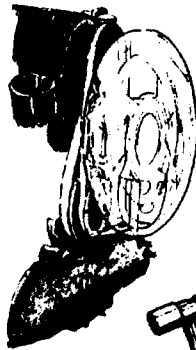
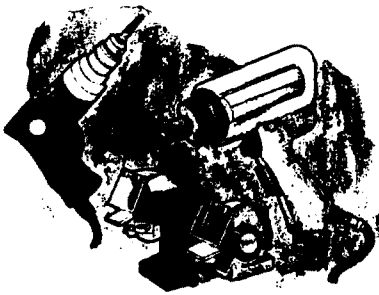


Summary

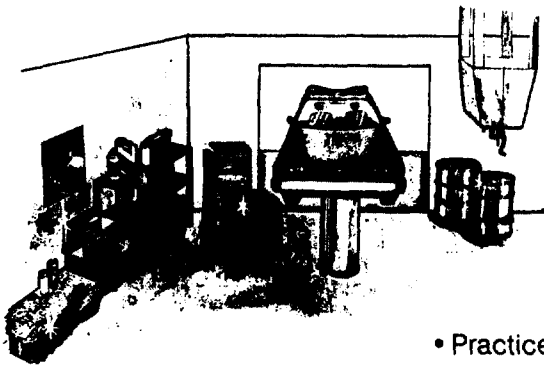
Preventing accidents that can result from hazardous operations involves using common sense and **"Thinking Safety"** at all times.

Remember to:

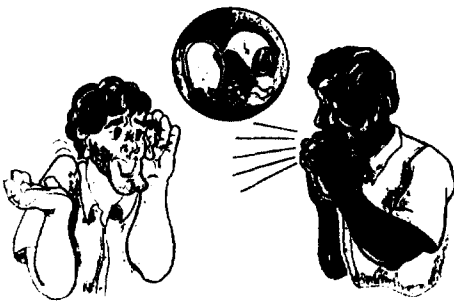
- Identify and understand why certain operations are hazardous.



- Use the proper protective equipment for each operation.



- Practice "Good Housekeeping" habits.



- Also remember that protecting your back when lifting and your hearing from noise are as important as protecting your sight, lungs, and skin.



Name: _____

Complete the following exercise for Module 4. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

AUTOMOTIVE REPAIR SHOP HAZARDS

Fill in the blanks

- 1) Preventing accidents involves **thinking** _____ at all times.
- 2) The first step in preventing accidents is to i _____ the hazardous operations in your shop.
- 3) Use of _____ and p _____ tools is a hazardous operation common to most automotive repair shops.

True or False — Mark T for True, F for False

- _____ Most personal protective equipment used to handle hazardous materials is also used while performing hazardous operations.
- _____ Skin and body protection are not needed when performing hazardous operations — only when handling hazardous materials.
- _____ Good housekeeping has nothing to do with preventing accidents.

Circle the best answer

- 1) Compressed air used for cleaning must be reduced below:
a) 5 psi b) 25 psi c) 30 psi
- 2) Compressed air should never be used to:
a) power an impact gun b) clean parts or tools
c) clean yourself or another worker
- 3) When cutting, drilling, hammering, chiseling or grinding, you should **always**:
a) wear gauntlet gloves
b) use electric tools with worn power cords
c) cut the third prong off the electrical plug
d) wear safety glasses or a full face shield

TEAR ALONG DOTTED LINE



MODULE

4) When **gas welding** you should:

- a) wear dark lens goggles and a face shield
- b) wear flameproof gloves and clothing
- c) use acetylene with no more than 15 pounds gauge
- d) all of the above

AUTOMOTIVE REPAIR SHOP HAZARDS (Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 4: Automotive Repair Shop Hazards.

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 4.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

CLEAN-UP OF SPILLS AND DISPOSAL

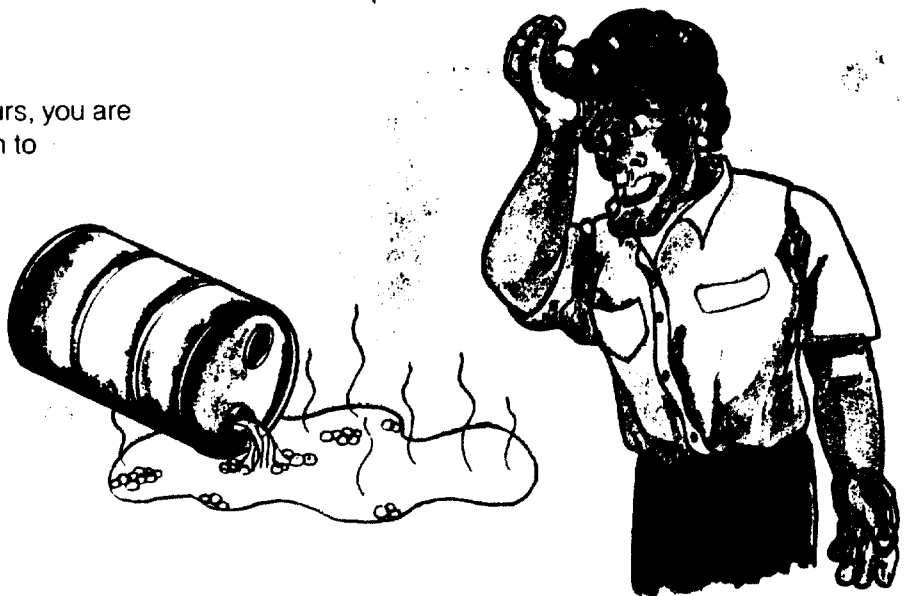


Clean-up of spills and proper disposal of a hazardous material is necessary to protect yourself and your community.

Today, every state requires by law that you dispose of hazardous wastes in the proper way. This module covers the rules that concern disposal and what you need to know to handle hazardous material spills.

In most cases, if an accidental spill occurs, you are the only one who can act quickly enough to prevent a disaster.

Most hazardous materials catch fire easily, and if spilled over a large area they begin to evaporate quickly. The vapors add to the fire hazard, and they also find their way into your throat and lungs, because you breathe these vapors.





If there is a spill, small or large, you must know what to do, and you must react quickly!

You must be prepared to handle a spill **before** it happens. To prepare yourself to handle spills, the product label and MSDS are the best places to start. While each MSDS gives you spill information, some product labels may not.



The spill section of the container label, or the MSDS will tell you:

- What to use to absorb or soak up the material.
- What personal protective equipment to wear to prevent exposure during clean-up.



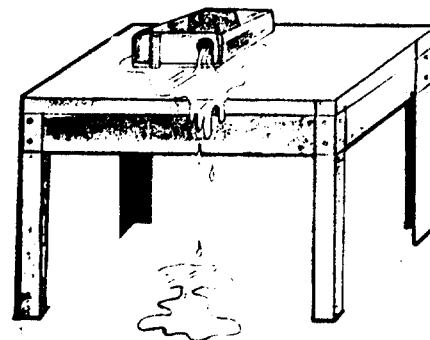
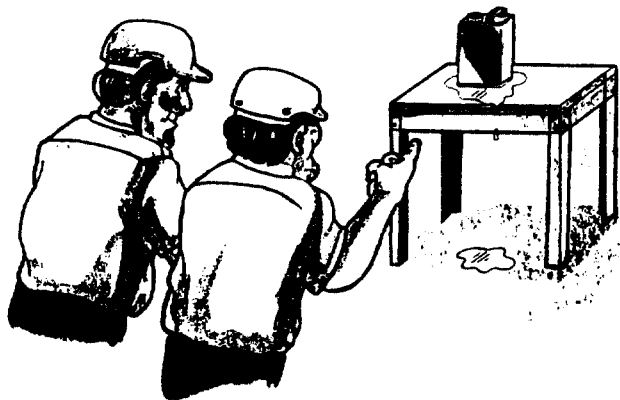
No matter what the spilled material is, always:
**TELL YOUR SHOP MANAGER
IMMEDIATELY!**

If there is a spill in your work area, you must act quickly:

First, decide if the spill is large or small.

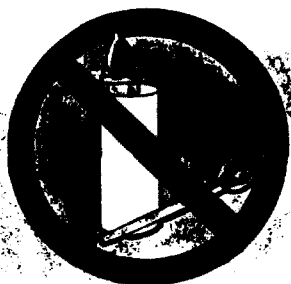
SMALL SPILL

- Try to stop the spill immediately.
Inform your shop manager. The shop manager can review the product MSDS for instructions on how to deal with the spill.

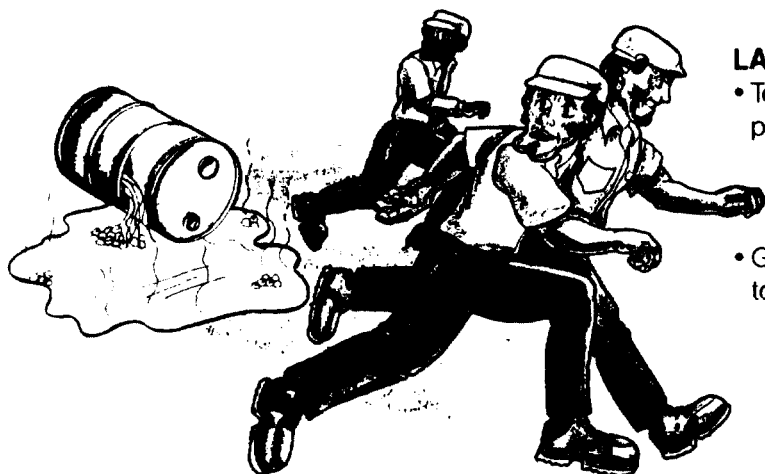


- Have everyone leave the area at once and allow fresh air into the area.

- Use the recommended equipment so you don't breathe the vapors, or get any of the material on yourself.
- Remove anything that might cause the material to ignite, such as flames, cigarettes or electrical wiring.



- Use recommended absorbents, such as paper towels, rags or special absorbent materials; then put any leftover liquids in a clean, empty container.
- Put used absorbents in an air-tight metal container that is closed tightly and emptied daily.



LARGE SPILL

- Tell your shop manager to contact trained "clean-up" personnel immediately.
- Warn your co-workers and anyone else to leave the area; then seal off the area by closing all the windows and doors.
- Get the product MSDS and be ready to give information to "clean-up" personnel.

You can keep spills from happening by keeping containers tightly closed and by transferring materials in small amounts. Before a spill happens make sure you

KNOW WHAT TO DO!

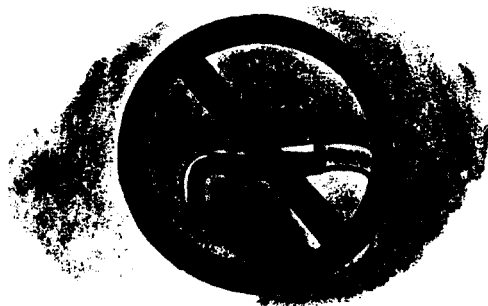
You need to **take special care when cleaning up fine dusts from:**

- asbestos
- battery corrosion
- metal particles
- glass bead residue
- grinding wheel dust



Use a special vacuum designed to pick up these very fine particles. If your shop doesn't have one of these special vacuums, wet down particle areas with water and sweep up or use a mop to collect the residue.

Never use an air gun. Air guns only spread the particles around and once these tiny particles become airborne, they will end up in your lungs.



Sooner or later, each of the hazardous materials you work with become hazardous wastes that you need to dispose of. There are new laws and regulations with strict rules for disposal of hazardous wastes.

The most important law that regulates hazardous waste is the **Resource Conservation and Recovery Act (RCRA)**. Your employer knows the details of this new law. Basically, the law says that hazardous material users are responsible for those hazardous materials from the time they become a waste until they are properly disposed of.

Although you are not responsible for the whole waste-disposal process, you do play an important part in preparing the hazardous wastes you generate for disposal or recycling.



What are the hazardous wastes generated in your shop that need special handling?

- caustic wastes
- waste crankcase and transmission oil
- brake fluid, automatic transmission fluid, and antifreeze
- batteries and battery acid
- waste solvent and carburetor cleaner



How do you know what to do with a hazardous waste material?

FIRST: Check the Material Safety Data Sheet (MSDS) for each material under "waste disposal method." Most MSDS say to dispose in accordance with local, state and federal regulations, and **not** to incinerate, or burn, in closed containers.

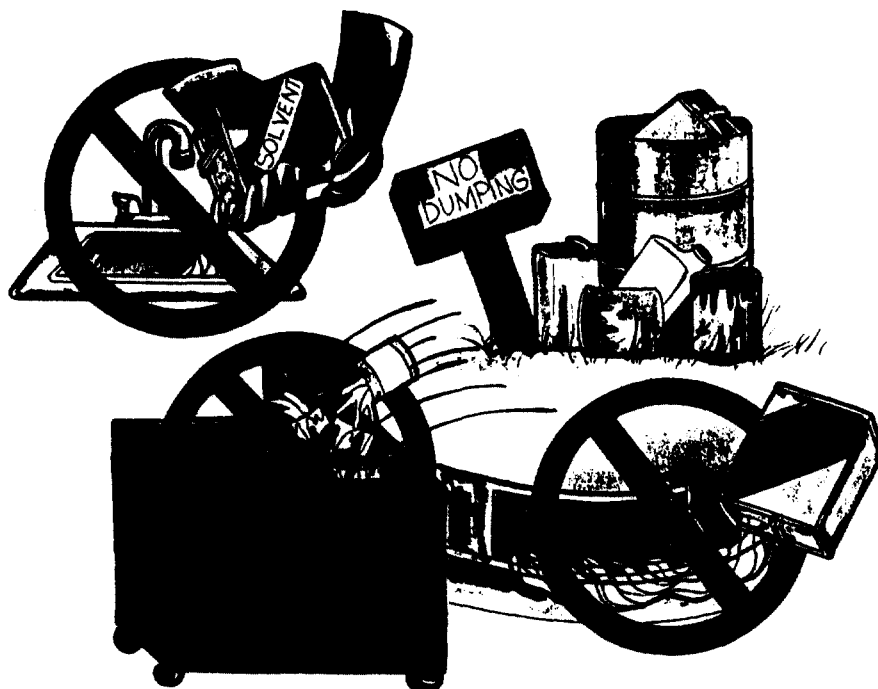
SECOND: Check with your shop manager to find out what the exact method is in your shop for disposal of each hazardous waste.

THIRD: Follow the recommendations you have been given.



There are only two **LEGAL** ways to dispose of hazardous waste:

- Recycle the hazardous waste in your shop, then reuse the material.
- Have a licensed disposal contractor remove the hazardous waste to a treatment facility.



This means it is **ILLEGAL** and there are stiff **PENALTIES** for:

- Throwing hazardous wastes into your trash dumpster.
- Dumping the wastes anywhere other than a licensed facility.
- Pouring wastes into drains—this means sinks, toilets, floor drains—or washing them into sewers.

Your shop should have separate containers for each different hazardous waste material and each container should have a label telling what is inside.

Your role in the waste-disposal process is to handle the hazardous waste the right way until it is ready to be recycled or disposed of.

You have certain responsibilities for handling hazardous wastes:

- Place wastes in the correct storage containers and make sure they are tightly sealed and not overfilled.
- Make sure you don't mix different hazardous wastes in the same container, such as waste oil and battery acid or carburetor and brake fluid waste.
- Don't mix any materials you think might react together. If you have any doubt, ask your shop manager.
- Wear the proper personal protective equipment when handling a hazardous waste material.

Hazardous wastes can threaten you, your family, your neighbors, and your community. Please do your part to protect yourself and everyone around you from accidents that can happen when a hazardous waste is not handled properly.



Summary

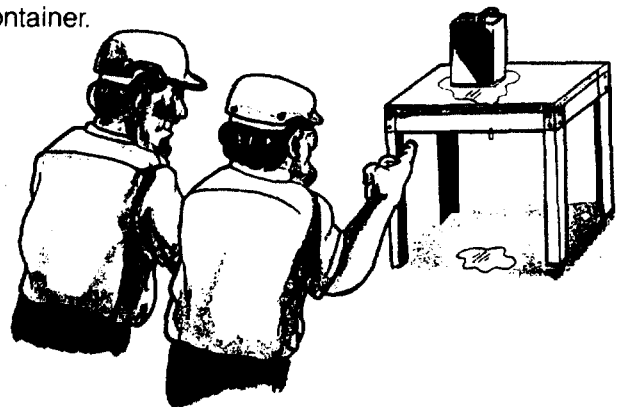
To handle a hazardous material spill you must know what to do and you must act QUICKLY. **If there is a spill remember:**

- You must tell your shop manager.
- Decide if the spill is small or large.
- Take the proper action for a large or small spill.

When a hazardous material becomes a "hazardous waste," make sure you:

- Don't mix different wastes in the same storage container.

- Place wastes in the correct storage containers.



- Wear proper protection when handling hazardous waste.



Name: _____

Complete the following exercise for Module 5. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

CLEAN-UP OF SPILLS AND DISPOSAL

Fill in the blanks

- 1) You must be prepared to handle a spill _____ it happens.
- 2) The product _____ and MSDS are the best places to start to prepare yourself to handle spills.
- 3) No matter what the spilled material is, notify your shop _____ immediately.

True or False — Mark T for True, F for False

- _____ If a spill occurs in your work area it is *not* important to know if the spill is large or small.
- _____ It is important to use the proper absorbents when cleaning up a spill.
- _____ It is illegal to pour hazardous materials down a drain or to wash them into sewers.
- _____ The Resource Conservation Recovery Act makes sure someone is responsible for hazardous waste from the time it is generated until it is disposed of.

Circle the best answer

- 1) Hazardous wastes generated in the automotive repair shop include:
a) waste oil b) batteries and acids c) solvent wastes
d) caustic wastes e) a and b only f) all of the above
- 2) There are really only _____ forms of waste disposal that are legal
a) 3 b) 4 c) 2 d) none of the above
- 3) Disposal instructions can always be found:
a) on the product label b) on the product MSDS
c) by asking your shop manager d) both b and c

4) Your duties in the waste-disposal process include:

- a) placing wastes in proper storage containers
- b) mixing different wastes in the same storage container
- c) using protective equipment only when depositing large amounts of waste

CLEAN-UP OF SPILLS AND DISPOSAL

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 5: Clean-up of Spills and Disposal.

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 5.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

EXPOSURE AND FIRST AID PROCEDURES

Many of the materials used in automotive repair shops today can be a health hazard to you and your co-workers. Listed below are the major materials you use every day. This module explains how you can protect yourself from **exposure** to these hazardous materials, and what to do if you or a co-worker become exposed.

Major automotive repair shop hazardous materials:

- solvents/removers
- fuels
- asbestos
- lubricating fluids
- hydraulic/cooling fluids
- compressed gases
- battery acid
- adhesives
- exhaust gases
- paint products
- caustic solutions
- carburetor cleaner



EXPOSURE means that you have come into contact with a material.

Exposure to a material can happen in different ways, and the effects of exposure can be short-term or long-term.

- You will feel **short-term** effects immediately after exposure, or after only a few hours.
- **Long-term** effects show up months or even years later.

Although short-term effects may not worry you, the long-term effects caused by many exposures to a hazardous material can cause permanent damage to your health. If you experience headache, dizziness, confusion, or a very sick feeling after working with a hazardous material, you are probably feeling the short term effects of exposure.

How does exposure occur and what kind of problems does it cause?

EYE CONTACT can lead to eye injury or blindness.

INHALATION can cause damage to lungs, the respiratory system and the brain.

SKIN CONTACT can cause burns, rashes and infection.

SWALLOWING can cause internal organ damage and death.



Exposure to certain materials can cause lung, kidney and liver diseases, as well as cancers, sterility, and birth defects in unborn children. Nervous system and brain damage may be caused by materials that are inhaled or absorbed through the skin, then find their way into your bloodstream.



Without proper protection, exposure to a hazardous material can cause serious health problems. Even though your employer is responsible for your safety at work, **YOU** are really the only one who can protect your health and safety on the job. Here are ways you can prevent accidental exposure:



FIRST — KNOW THE MATERIAL YOU ARE HANDLING

If you don't know what is inside a container, don't handle it. (Never sniff the vapors from a container to figure out what's inside.)

If you know what is inside a container, make sure you know how the contents can harm you. Read the label and MSDS for the material.



SECOND — USE THE PROPER PERSONAL PROTECTIVE EQUIPMENT

Before using a hazardous material read the container label and the product MSDS. Each material has different protection requirements. Make sure you use the correct equipment and that the equipment fits you properly.

In the automotive repair shop your protective equipment includes:

- safety glasses, face shields and tinted goggles
- different types of gloves
- special shoes and boots
- ear plugs and ear muffs
- protective suits
- respirators



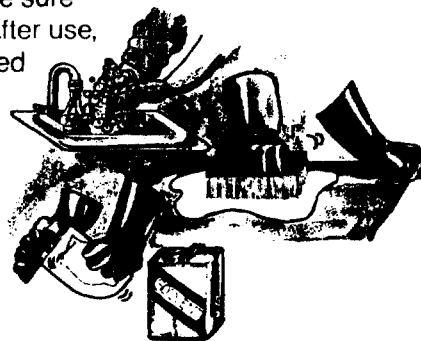
Although there are special instruments for measuring exposure levels to different materials, most shops don't own these devices. For this reason, you and your co-workers need to be alert and aware of the release of hazardous materials in your shop. If you smell a strong odor or suspect a hazardous material has been released, notify your shop manager and inform your co-workers. **Get out of the area fast!**

Before use, inspect your protective equipment to make sure there are no tears, rips or other damaged parts. After use, make sure the equipment is cleaned and stored in the proper area, or disposed of correctly.

THIRD — FOLLOW THE PROPER CLEAN-UP PROCEDURES

Wash thoroughly after handling a hazardous material. Clean contaminated protective equipment after use.

Keep the work area clean and free from build-up of hazardous materials.



Before exposure occurs:

- Learn first-aid procedures and where supplies are kept. Your local Red Cross provides first-aid training free of charge. CPR training is also a good idea.
- Know the telephone numbers to call for medical help and poison information.

If exposure does occur, you must act **quickly**. In **all** cases, if you or a co-worker become exposed, tell the shop manager immediately so that he can check the product MSDS and call for medical help if necessary.

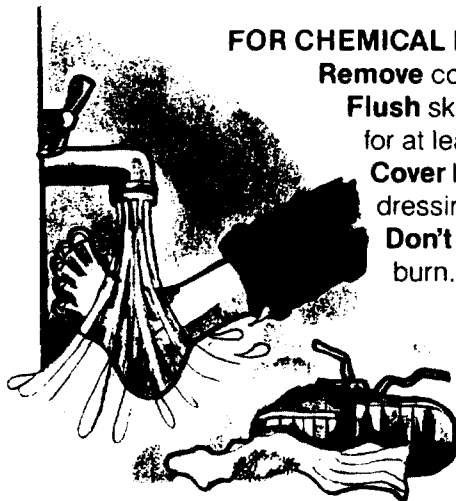
In a medical emergency — BEFORE HELP ARRIVES:**FOR CHEMICAL BURNS**

Remove contaminated clothing.

Flush skin or eyes with water, for at least 15 minutes.

Cover burn with sterile dressing.

Don't put ointments on the burn.

**FOR LARGE HEAT BURNS**

Cover areas with dry sterile bandage.

Keep victim quiet, head and chest slightly lower than rest of body. Burned arms or legs should be elevated slightly.

Treat for shock.

**FOR SWALLOWED SUBSTANCES**

See container label or MSDS for instructions.

Do or do not induce vomiting per instructions.

Call for a doctor immediately.

**FOR INHALED SUBSTANCES**

Move the victim to fresh air.

Begin artificial respiration if breathing has stopped.

Keep victim warm and quiet.

**FOR SHOCK**

Symptoms include: Cool, damp, pale skin; weak pulse; breathing which is quick and unsteady; weakness; nausea.

Treat causes of shock (blood loss, stopped breathing).

Keep victim lying down and covered, feet raised slightly; place on side if unconscious.

If conscious give non-alcoholic drinks, such as water.

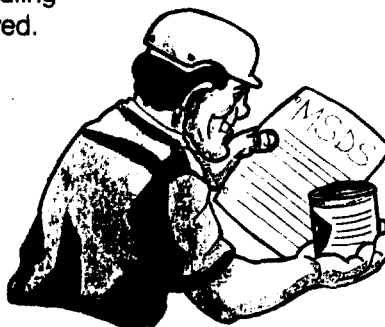


Summary

You can protect your health on the job. It is not only your employer's responsibility, it is **your** responsibility. Don't take chances by risking exposure to the hazardous materials you use each day to earn your living.

Remember to:

- Know what you're handling and the hazards involved.



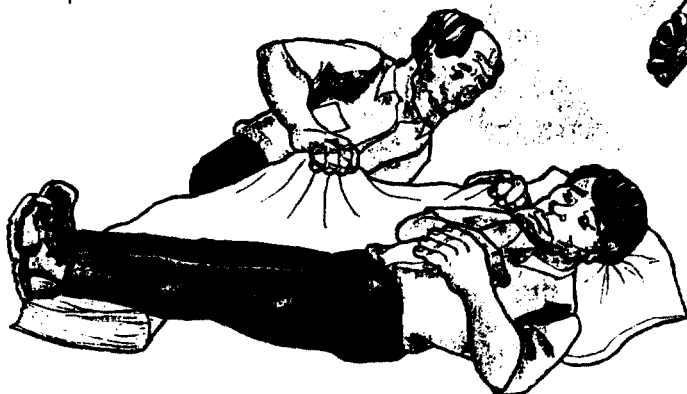
- Use the proper personal protective equipment.



- Keep yourself and your work area clean.



- Know first-aid procedures.



EXPOSURE AND FIRST AID PROCEDURES

Name: _____

Complete the following exercise for Module 6. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Exposure means: You have to come into c _____
with a material.
- 2) Name 3 ways exposure can occur. 1) _____
Swallowing a material is one way.
2) _____
3) _____
- 3) Serious damage can take place inside your body if a chemical in a
hazardous material gets into your b _____.
- 4) What organ does inhalation of hazardous material vapor effect?

True or False — Mark T for True, F for False

- _____ You don't have to know what is inside a container before you use it.
- _____ You only need to use protective equipment when you want to.
- _____ Protection requirements can be found on the container label and the product MSDS.
- _____ Every material has the same protective equipment requirements.

Circle the best answer

- 1) Before using protective equipment you should inspect it for:
a) tears b) rips c) damaged parts d) all of the above
- 2) Which of the following really isn't personal protective equipment:
a) glasses or face shields b) rubber boots c) respirator
d) regular street clothing e) gloves



- 3) If you or a co-worker become exposed you should immediately tell:
- a) a doctor b) your shop manager c) the police d) your parents
- 4) If a chemical burn results from exposure to a hazardous material you should not:
- a) flush exposed skin with water
 - b) cover the burn with sterile dressing
 - c) flush eyes with water, if exposed
 - d) put ointments on the burn

EXPOSURE AND FIRST AID PROCEDURES

(Continued)

Match the Type of Exposure in the Left Column With the Correct First-Aid Procedure in the Right

- | | | |
|--------------------------|-------|--|
| A. Inhalation of vapor | _____ | Tell shop manager. Read product label and MSDS. Do or do not induce vomiting. Get medical attention. |
| B. Chemical burn on skin | _____ | Move victim to fresh air. |
| C. Swallowing a material | _____ | Flush exposed area with water for at least 15 min. |

I have reviewed this exercise with my shop manager. I understand the contents of Module 6: Exposure and First-Aid Procedures.

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 6.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

FIRE AND EXPLOSION

Although fires and explosions are a risk in almost every workplace, they are even more of a risk in the automotive repair shop. Why? Because there are many hazardous materials in the shop that burn easily and could explode. This module deals with the causes of fires and explosions; how to prevent them; and what you should know if either occurs.

For a fire or an explosion to happen, the ingredients are basically the same:

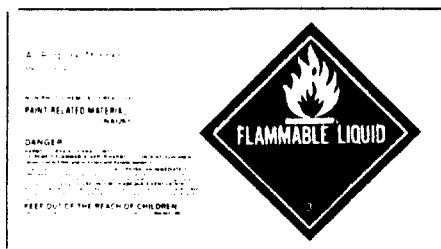
SOURCE OF IGNITION + AIR + FLAMMABLE MATERIAL = FIRE/EXPLOSION

The difference between a fire and an explosion happening depends on:

- The **FLAMMABLE** material.
- The amount of material that comes in contact with an ignition source.

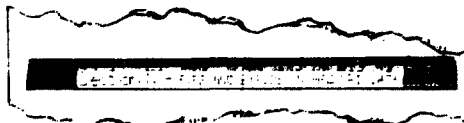
The first step in preventing a fire or explosion is to determine if the material you are using is **FLAMMABLE**.

FLAMMABLE MEANS: A material that can catch fire easily.



To find out if a material is **FLAMMABLE**, read:

- the container label (general information). Or read
- the "Fire and Explosion" data area on the product MSDS (detailed information).



The "**Fire and Explosion**" data area of the MSDS talks about the Flash Point of a material. The **FLASH POINT** is: The lowest temperature at which a flammable liquid gives off enough vapors to ignite (catch fire). The **LOWER** the **FLASH POINT**, the more **DANGEROUS** the material.

You should know that there are different levels of flammability. The level of flammability depends on the flashpoint of a material.

The Material is:

"COMBUSTIBLE"	Flash Point
"FLAMMABLE"	100°F and Above
"EXTREMELY FLAMMABLE"	20° — 100°F
	20°F and Below

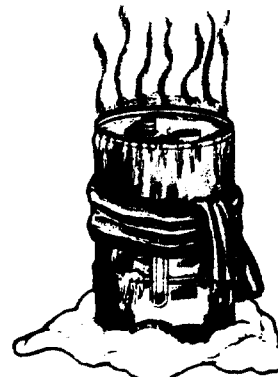
So, if a product is labeled "**EXTREMELY FLAMMABLE**," that material will ignite more easily than a "**FLAMMABLE**" or "**COMBUSTIBLE**" material, and at a much lower temperature. **Fuels, solvents/removers** and **compressed gases** are considered **EXTREMELY FLAMMABLE**.



COMBUSTIBLE



FLAMMABLE



EXTREMELY
FLAMMABLE

The **"Fire and Explosion"** data area of the MSDS also describes:

- The type of fire extinguisher to use on a material.
- Special care you should take when handling a material to prevent a fire or explosion.
- Special fire fighting methods.

You don't need to memorize the flash point of every material you work with. **You do** need to read the Product Material Safety Data Sheet to know if and when the material in your work area could catch fire or explode. Please remember, the MSDS binder is organized into product groups. Each product group section "tab page" explains the materials in that group. Read each section tab page and understand the fire and explosion information for each product group.

The **FLAMMABLE MATERIAL** in our formula can be in three forms:

- Liquid solvent, removers, fuels
- Solid sludge from carburetor cleaner and caustic solutions
- Gas (vapor) fuel vapor, caustic vapor, carburetor cleaner vapor; gases given off while charging a battery.

Common **SOURCES OF IGNITION** include:

- Flames matches, gas welding, pilot lights
- Sparks lighted cigarettes, electrical equipment or static electricity, friction from a dropped tool. Any powered tool like bench grinders, hammers, air chisels, and saws all generate sparks when used on a metal surface.
- Heat (high temperature materials)
 - tools and equipment that stay hot after use
 - direct sunlight on a container

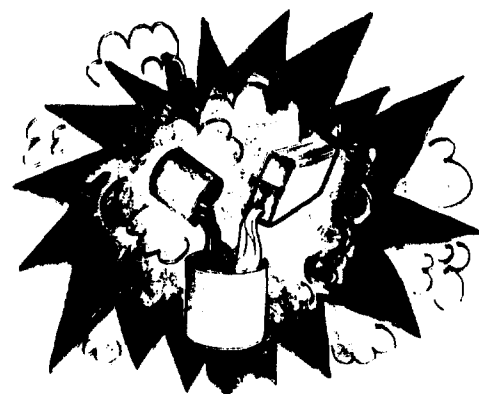


While all of the ingredients above can lead to fire, you should understand that if a material is flammable, under certain conditions, that material could explode.

FLAMMABLE LIQUIDS can explode during storage, transfer and disposal.

POOR VENTILATION can cause explosions when vapors build up in an area that doesn't have fresh air continuously circulating through it.

CHEMICAL REACTIONS can cause explosions when two materials are mixed together that should not be. The materials **react** with each other and cause an explosion.



Now that we know what the causes and ingredients are, let's look at the ways you can prevent fires and explosions from happening.

FIRE PREVENTION

- Identify materials when they arrive at your shop. Is the material flammable? Will it react with other materials?
- Store large quantities outdoors or away from the regular work area until ready to use.
- Remove all ignition sources and activities from areas where flammable materials are used or stored.
- Inspect your shop weekly and remove any hazardous material residue that builds up on floors, equipment or walls.
- Control vapors that build up in the shop by making sure there is good ventilation.
- Make sure large containers are properly grounded and sealed before transferring flammable liquids.
- Clean up spills immediately.



Usually, you won't have any warning before a fire or explosion occurs, so you must be prepared and know what to do before the situation occurs.

If a fire or explosion does happen:

- Tell your shop manager immediately and have him call the Fire Department.
- Evacuate the area—get everyone out.
- Determine if the fire is small enough for you to control.
- **If controllable,**
 - Use the proper protective equipment.
 - Use the proper kind of extinguisher to put the fire out.
- **If out of your control,**
 - Close doors and windows to keep the fire from spreading to other areas.
 - Wait for help to arrive.

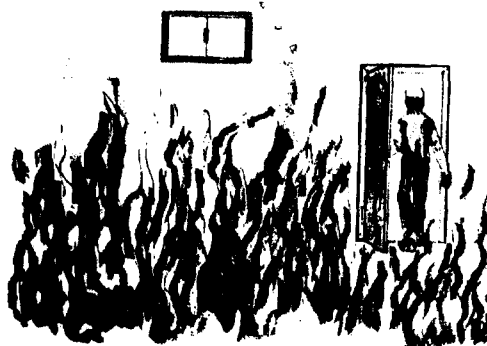


NOTE: Many fire codes require fire resistant wall and door construction in buildings where hazardous materials are used or where hazardous operations take place. Closing these special doors and the windows when a fire becomes uncontrollable will actually prevent the fire from spreading in most cases.

The greatest causes of fire in automotive shops are flammable and explosive vapors.

THE FIRST THING TO DO WHEN YOU DISCOVER A FIRE IS TO CALL YOUR LOCAL FIRE DEPARTMENT.

It's better to have a fire truck arrive after you have put the fire out than later when the fire is completely out of control.

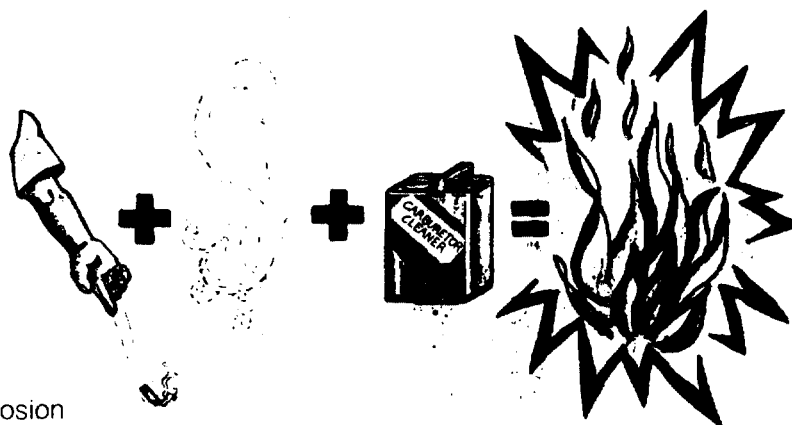


Summary

To prevent a fire or explosion from happening, you need to know what could cause the hazardous materials in your workplace to catch fire or explode.

Remember the basic ingredients:

SOURCE OF IGNITION + AIR + FLAMMABLE MATERIAL = FIRE/EXPLOSION



When a fire or explosion does happen:

- Call the local Fire Department immediately.
- Figure out if the fire is small enough for you to control.

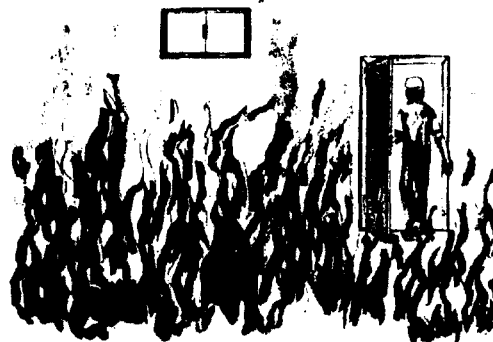


For a **CONTROLLABLE** fire:

- Use the proper protective equipment.
- Use the proper kind of extinguisher.

For an **UNCONTROLLABLE** fire:

- Keep the fire from spreading by closing all doors and windows.
- Wait for help to come.



**FIRE AND
EXPLOSION**

Name: _____

Complete the following exercise for Module 7. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) FLAMMABLE means: _____
- 2) The basic ingredients for a fire or explosion are:
SOURCE OF IGNITION + AIR + _____
- 3) To find out if a material is flammable, read the container or the product
_____ DS.

True or False — Mark T for True, F for False

- _____ The FLASH POINT is the *maximum* temperature at which a flammable liquid gives off enough vapors to ignite.
- _____ The lower the FLASH POINT, the more dangerous the material.
- _____ You need to memorize the Flash Point of every material you work with.
- _____ Liquids, solids, and vapors are forms of "FLAMMABLE" materials.

Circle the best answer

- 1) Fuel in a gas tank is a _____ form of a combustible material.
a) solid b) vapor c) liquid d) gas
- 2) Flames, sparks and tools or equipment that hold high temperatures are:

a) "COMBUSTIBLE" b) uncontrollable c) related to air
d) SOURCES OF IGNITION



3) _____ can cause explosions.

- a) tightly capped containers
- b) poor ventilation and build-up of vapors
- c) chemical reactions
- d) both b and c above

4) The first thing you should do when you discover a fire is:

- a) use the proper protective equipment
- b) use the nearest fire extinguisher
- c) tell your shop manager to call the Fire Department
- d) evacuate the area

I have reviewed this exercise with my shop manager. I understand the contents of Module 7: Fire and Explosion.

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 7.

Shop Manager _____ Date _____

FIRE AND EXPLOSION

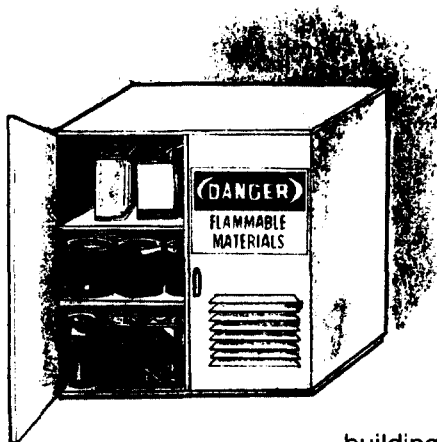
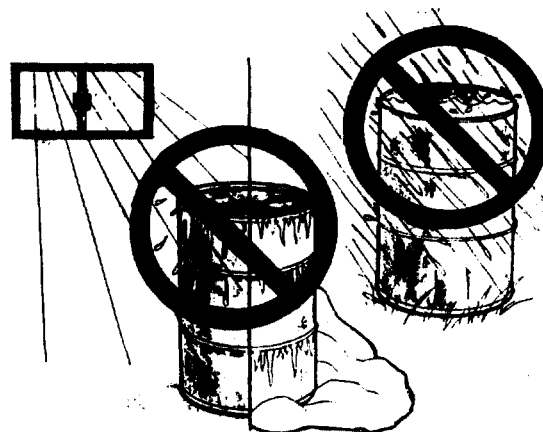
(Continued)

TEAR ALONG DOTTED LINE

STORAGE AND MIXING OF HAZARDOUS MATERIALS

When you are finished using a hazardous material or when new supplies arrive, you must make sure the materials are stored correctly. This short module deals with storing and mixing hazardous materials.

Storage information can be found on the product label, on the product MSDS, and also by reviewing local fire codes.



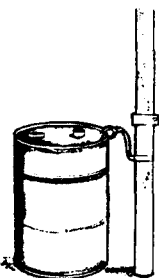
The information will tell you:

- What type of container to store the material in.
- If the container should be vented.
- If the container should be kept away from heat, cold, or wet.

The information will also tell you:

- If the material should be stored in a special building or closet. (Most flammables should be stored in metal closets.)

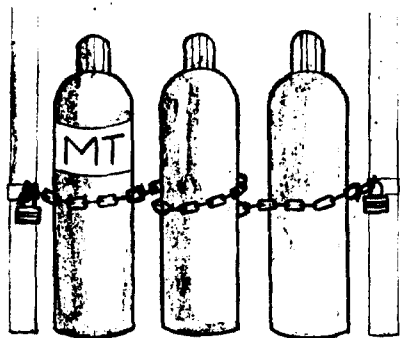
- Which material should not be stored in the same area due to reactive properties.
- If the container should be grounded to prevent static electricity build-up. This is done by simply attaching a ground wire to each container.



Before you store a hazardous material:

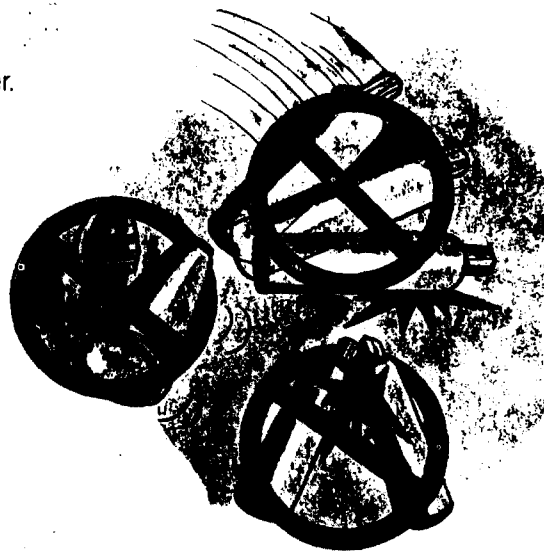
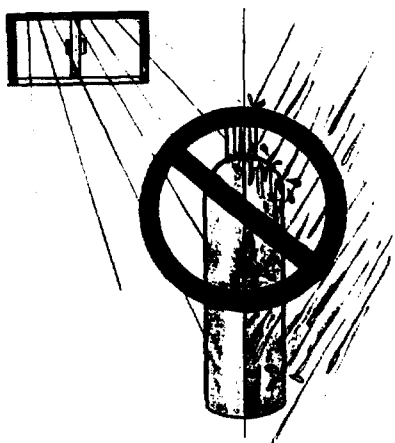
- Be sure the material is stored in an approved container.
- Be sure the container is tightly closed.
- Be sure the warning label is in place on the container.
- Inspect the container for leaks.

If your shop does welding and you are storing a compressed gas cylinder:



- Secure it in an upright position at all times. It should never be stored lying on its side, or leaning against anything.
- Always store the cylinders with caps in place, even when empty.
- Use hand trucks and wear protective shoes when moving cylinders around.

- **Don't** roll the cylinders.
- **Don't** drop or bang the cylinders together.

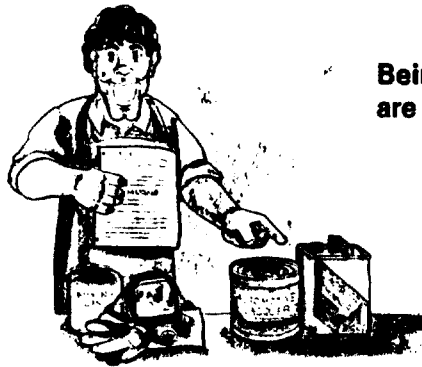


- Do not store cylinders near heat, water, or direct sunlight.

Occasionally it may be necessary to mix two hazardous materials together.

Before you mix any hazardous material you need to:

- **Be informed** about the material you are mixing.
- **Prepare yourself** and the area where you will mix the material.



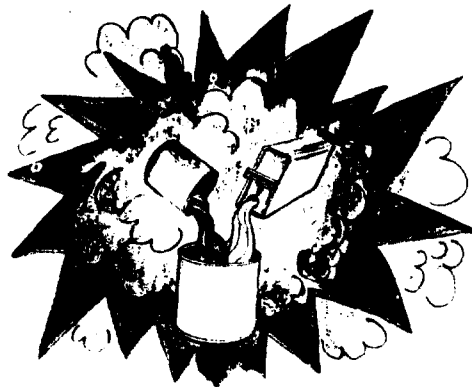
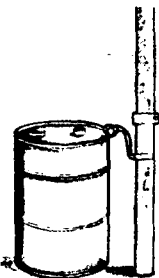
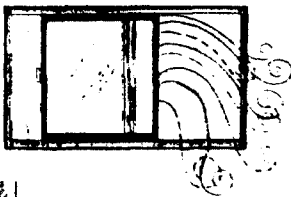
Being informed means knowing what you are mixing:

- Read the container label and the manufacturer's instructions for mixing.
- Read the product MSDS and find out what you can and cannot mix with a certain material.



Next, prepare yourself and the mixing area:

- Find out what type of protective equipment you need to wear by reading the product MSDS **before** mixing.
- Know the acceptable exposure limits to the material.
- Make sure the mixing area is well ventilated (has a good supply of fresh air).
- Be sure there are no cigarettes, flames, or electrical wiring in the area that could cause the material to explode or catch fire.
- When transferring a hazardous material to another container, make sure large containers are properly grounded.



Above all, if you are not sure about mixing two materials together,

ASK YOUR SHOP MANAGER!

Mixing the wrong materials together can cause chemical reactions that could lead to a fire or explosion.

Summary

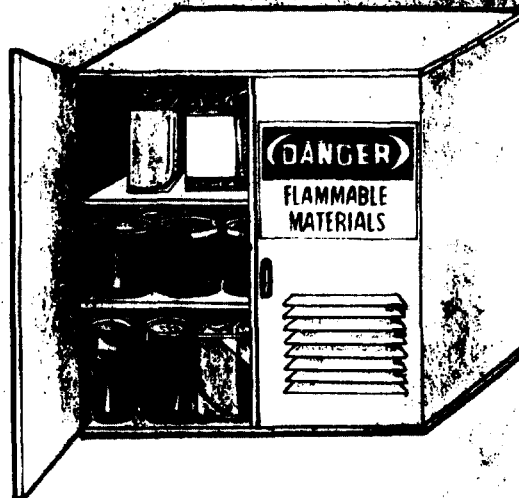
It is very important to store hazardous materials properly and to take precautions when mixing different materials together.

Remember to:

- Be informed about the materials you are mixing.
- Prepare yourself and the area for mixing.



- Ask your shop manager if you have any questions.



When storing a hazardous material:

- Use an approved container.
- Store in an area according to the product label or MSDS.

Name: _____

Complete the following exercise for Module 8. You may refer back to the module if needed. After completing the exercise, review it with your shop manager.

Fill in the blanks

- 1) Storage information can be found on the product container

- 2) If you're not sure about mixing different materials you should ask your

- 3) When mixing hazardous materials you should anticipate
_____ reactions.

True or False — Mark T for True, F for False

- _____ The area you store a material in is not important as long as the container is tightly sealed.
- _____ Storage information can be found on the product label.
- _____ When storing a hazardous material, warning labels are not needed if you will use the material within two weeks.

Circle the best answer

- 1) Storage information is:
 - a) found on the product label
 - b) found on the product MSDS
 - c) not necessary if the material is in a tightly sealed container
 - d) both a and b above
- 2) Certain materials must be stored away from:
 - a) heat b) cold c) water d) a, b, and c
 - e) fire extinguishers

STORAGE AND MIXING OF HAZARDOUS MATERIALS

3) When storing compressed gas cylinders they should be secured in _____ position at all times.

a) a leaning b) a lying down c) an upright

STORAGE AND MIXING OF HAZARDOUS MATERIALS

(Continued)

I have reviewed this exercise with my shop manager. I understand the contents of Module 8: Storage and Mixing of Hazardous Materials.

Employee _____ Date _____

I am satisfied that the employee, (named above) understands the contents of Module 8.

Shop Manager _____ Date _____

TEAR ALONG DOTTED LINE

MODULE 1

The Employee's "Right to Know"

Fill in the Blanks	True or False	Circle answer
1) Hazard	1) T	1) C
2) "Right to Know"	2) T	2) B
3) Warning	3) F	3) C
Material Safety	4) F	

MODULE 2

Product Labels and Material Safety Data Sheets

Fill in the Blanks	True or False	Circle answer
1) Inventory Roster	1) F	1) D
2) Material Safety	2) F	2) D
Data Sheet	3) T	3) C
3) Warning	4) T	

MODULE 3

Handling of Hazardous Materials

Fill in the Blanks	True or False	Circle answer
1) Hazardous	1) T	1) A
2) Flammable	2) T	2) D
3) Protect	3) T	3) D
4) Gasoline	4) F	4) A

MODULE 4

Automotive Repair Shop Hazards

Fill in the Blanks	True or False	Circle answer
1) Safety	1) T	1) C
2) Identify	2) F	2) C
3) Hand and Power	3) F	3) D
		4) D

MODULE 5

Clean-Up of Spills and Disposal

Fill in the Blanks	True or False	Circle answer
1) Before	1) F	1) F
2) Label	2) T	2) C
3) Manager	3) T	3) D
	4) T	4) A

APPENDIX

(Continued)

ANSWERS TO REVIEW EXERCISES

MODULE 6

Exposure and First-Aid

Fill in the Blanks	True or False	Circle answer	Matching
1) Contact	1) F	1) D	1) C
2) • Eye Contact	2) F	2) D	2) A
• Inhalation	3) T	3) B	3) B
• Skin Contact	4) F	4) D	
3) Blood Stream			
4) Lungs			

MODULE 7

Fire and Explosion

Fill in the Blanks	True or False	Circle answer
1) A Material That Can Catch Fire Easily	1) F	1) C
	2) T	2) D
2) Flammable Material	3) F	3) D
3) MS	4) T	4) C

MODULE 8

Storage and Mixing of Hazardous Materials

Fill in the Blanks	True or False	Circle answer
1) Label	1) F	1) D
2) Shop Manager	2) T	2) D
3) Chemical	3) F	3) C

APPENDIX

(Continued)

ANSWERS TO REVIEW EXERCISES

(Continued)

EPA Region I

State Waste Programs Branch
JFK Federal Building
Boston, Massachusetts
(617)565-3400

Connecticut, Massachusetts,
Maine, New Hampshire, Rhode
Island, Vermont

EPA Region II

Air and Waste Management
Division
26 Federal Plaza
New York, New York 10278
(212)264-5175

New Jersey, New York, Puerto
Rico, Virgin Islands

EPA Region III

Waste Management Branch
841 Chestnut Street
Philadelphia, Pennsylvania
19107
(215)597-6632

Delaware, Maryland,
Pennsylvania, Virginia, West
Virginia, District of Columbia

EPA Region IV

Hazardous Waste Management
Division
345 Courtland Street, N.E.
Atlanta, Georgia 30365
(404)347-3433

Alabama, Florida, Georgia,
Kentucky, Mississippi, North
Carolina, South Carolina,
Tennessee

EPA Region V

Waste Management Division
77 West Jackson Street
Chicago, Illinois 60604
(312)886-7579

Illinois, Indiana, Michigan,
Minnesota, Ohio, Wisconsin

EPA Region VI

Hazardous Waste
Division
1445 Ross
Dallas, Texas 75202
(214)655-6700

Arkansas, Louisiana, New
Mexico, Oklahoma, Texas

EPA Region VII

Waste Management Division
726 Minnesota Avenue
Kansas City, Kansas 66101
(913)551-7533

Iowa, Kansas, Missouri,
Nebraska

EPA Region VIII

Waste Management Division
One Denver Place
999 18th Street, Suite 500
Denver, Colorado 80202
(303)293-1502

Colorado, Montana, North
Dakota, South Dakota, South
Dakota, Utah, Wyoming

EPA Region IX

RCRA Information Line
75 Hawthorne Street
San Francisco, California 94105
(415)744-2074

Arizona, California, Hawaii,
Nevada, American Samoa,
Guam, Trust Territories of the
Pacific

EPA Region X

Waste Management Branch—
HW-102
1200 Sixth Avenue
Seattle, Washington 98101
(206)553-2777

Alaska, Idaho, Oregon,
Washington

APPENDIX

EPA REGIONAL OFFICES

STATE REGULATORY AGENCIES

STATE	OSHA CONSULTATION	HAZARDOUS WASTE
ALABAMA	205-731-1534	205-271-7726
ALASKA	907-269-4940	907-269-4940
ARIZONA	602-542-5795	602-207-4108
ARKANSAS	501-682-4520	501-562-7444
CALIFORNIA	415-703-4050	916-324-1826
COLORADO	303-491-6151	303-692-3300
CONNECTICUT	203-566-4550	203-566-8843
DELAWARE	302-577-3908	302-739-3689
DISTRICT OF COLUMBIA	202-576-6651	202-404-1167
FLORIDA	904-488-3044	904-488-0300
GEORGIA	404-331-4767	404-362-2687
HAWAII	808-548-9100	808-586-4226
IDAHO	208-385-3283	208-334-5879
ILLINOIS	312-814-2339	217-524-3300
INDIANA	317-232-2688	317-232-4458
IOWA	515-281-5352	800-223-0425
KANSAS	913-296-4386	913-296-1600
KENTUCKY	502-564-6895	502-564-6716
LOUISIANA	504-342-9601	504-765-0332
MAINE	207-289-6460	207-289-2651
MARYLAND	410-333-1218	410-631-3343
MASSACHUSETTS	617-727-3463	617-292-5898
MICHIGAN	517-335-8250	517-373-2730
MINNESOTA	612-297-2393	612-296-8300
MISSISSIPPI	601-987-3981	601-961-5171
MISSOURI	314-751-3403	314-751-3176
MONTANA	406-444-6401	406-444-1430
NEBRASKA	402-471-2239	402-471-4217
NEVADA	702-486-5016	702-687-5872
NEW HAMPSHIRE	603-271-2024	603-271-2942
NEW JERSEY	609-292-0404	292-8341
NEW MEXICO	505-827-2888	505-827-2888
NEW YORK	718-797-7658	800-462-6553
NORTH CAROLINA	919-733-2360	919-733-2178
NORTH DAKOTA	701-221-5188	701-221-5166
OHIO	800-469-5582	2036
OKLAHOMA	405-528-1500	405-271-5333
OREGON	503-378-3272	503-271-5913
PENNSYLVANIA	800-382-1241	717-787-7311
RHODE ISLAND	401-277-2438	401-277-2797
SOUTH CAROLINA	803-734-9599	803-734-5200
SOUTH DAKOTA	605-688-4101	605-773-3153
TENNESSEE	615-741-7036	615-741-3424
TEXAS	512-834-6600	512-453-8175
UTAH	801-530-6855	801-538-6170
VERMONT	802-828-2765	802-244-8702
VIRGINIA	804-786-5873	804-371-0525
WASHINGTON	206-956-5638	206-459-6369
WEST VIRGINIA	304-558-7890	304-558-5393
WISCONSIN	608-266-9383(H) 414-521-5167(S)	608-266-2111
WYOMING	307-777-7786	307-777-7752

APPENDIX

OSHA CONSULTATION AND STATE WASTE MANAGEMENT AGENCY NUMBERS

(H) Health

(S) Safety

UNOCAL Refining and Marketing Division

Closure Report

Underground Storage Tank

UNOCAL Service Station # 4357

11280 National Boulevard

Los Angeles, California

December 1992

JMM James M. Montgomery



JMM James M. Montgomery
Consulting Engineers, Inc.



December 16, 1992

Los Angeles City Fire Department
Bureau of Fire Prevention
Underground Tank Enforcement Unit
200 N. Main Street, Room 920
Los Angeles, California 90012

Attention: Inspector Dwayne Golden
Subject: Unocal Station #4357, 4006 National Blvd., Los Angeles
Subsurface Tank Excavation

Dear Inspector Golden:

On behalf of UNOCAL, enclosed please find three copies of the Subsurface Tank Closure Report for the above mentioned site.

Please do not hesitate to contact Majid Rasouli at (818) 568-6948 if you require additional information on this subject.

Sincerely,

JAMES M. MONTGOMERY,
CONSULTING ENGINEERS, INC.

Majid Rasouli
Senior Engineer

Gail Banwell, R.G. # 5419
Supervising Hydrogeologist

cc: J. Adams(UNOCAL)

ENVIRONMENTAL OVERSIGHT OF TANK REMOVAL

**GASOLINE FUEL TANKS - UNOCAL SERVICE STATION #4357
11280 NATIONAL BOULEVARD, LOS ANGELES, CALIFORNIA**

Prepared for

**UNOCAL CORPORATION
17700 Castleton Street, Suite 500
City of Industry, California 91748**

Prepared by

**JAMES M. MONTGOMERY, CONSULTING ENGINEERS, INC.
301 North Lake Avenue
Pasadena, California 91101**

December 1992

TABLE OF CONTENTS

Section	Page
1.0 Introduction	1
2.0 Site Description	1
3.0 Regional Geology and Hydrogeology	1
4.0 Permitting and Compliance	1
5.0 Field Observations	2
6.0 Laboratory Analysis	2
7.0 Soil Disposal	3
8.0 Conclusion and Recommendations	3

FIGURES

1-1	Site Vicinity Map
2-1	Site Map with Soil Sample Locations
6-1	Soil Sample Analytical Results
8-1	Sampling Point Locations

TABLES

1	Summary of TFH and BTEX Analytical Results
2	Summary of Total Lead Analytical Results

APPENDICES

A	SCAQMD Rule 1166 Permit
B	Excavation PID Measurements
C	Laboratory Report & Chain-of-Custody Forms
D	Non-hazardous Waste Data Forms & Refuse Disposal Receipts

1.0 INTRODUCTION

At the direction of UNOCAL Corporation, James M. Montgomery, Consulting Engineers, Inc. (JMM) conducted a tank closure assessment at UNOCAL Service Station #4357 located at 11280 National Boulevard, Los Angeles, California (see Figure 1-1). The objective of this report is to describe the tank closure activities and the analytical results. Related paper work such as tank manifests and Fire Department Permit are to be documented in a separate report prepared by UNOCAL. This report has been prepared in accordance with standard industry practices for the closure of USTs.

2.0 SITE DESCRIPTION

The subject site is located in a commercial/residential area within the City of Los Angeles, bordered by National Boulevard to the North, and Sawtelle Boulevard to the West. The property consists of a garage building and associated pump islands built in 1971 (see Figure 2-1). Two 10,000 gallon single-wall steel subsurface gasoline tanks and one 550 gallon waste oil tank were installed in 1971, while the 10,000 gallon single-wall fiberglass diesel tank was installed in 1982. The underground storage tanks (UST) were utilized for the storage of gasoline and diesel fuels and waste oil.

3.0 REGIONAL GEOLOGY AND HYDROGEOLOGY

The site is located within the Santa Monica Basin. The area exposed during the recent subsurface tank excavation pit to a depth of 14 feet below ground surface (bgs) indicated that the site is underlain by dark brown silty clay. The region is interpreted to be underlain by Recent Alluvium underlain by the Lakewood and San Pedro Formations. Included within the alluvium sediments is a portion of the Bellflower aquiclude and the Ballona aquifer. The Bellflower aquiclude consists of 20 to 40 feet of clay and sandy clay extending to a maximum depth of about 50 feet bgs. The Ballona aquifer consists of 30 to 50 feet of gravel and coarse sand and has a maximum depth of 70 feet bgs. The Silverado aquifer is the only member of the San Pedro formation identified in the Santa Monica Basin. It is mainly sand and gravel, with a small amount of clay. It ranges from 100 to 280 feet in thickness, and extends downward to 450 feet bgs. Groundwater in the basin moves mainly toward the South.

4.0 PERMITTING AND COMPLIANCE

Excavation and Tank Removal operations were conducted on September 22, 1992 in accordance with the South Coast Air Quality Management District (SCAQMD) Rule 1166 Permit; effective December 23, 1991 and the Los Angeles City Fire Department Regulations. Copy of Rule 1166 Permit is contained in Appendix A.

5.0 FIELD OBSERVATIONS

The subsurface tank removal operation was conducted by SOLRAC Enterprises, Inc., Duarte, California. The tanks were checked for the presence of liquid and/or residual product upon arrival to the site prior to initiating excavation activities, none was detected or observed. An hnu Photoionization Detector (PID) equipped with a 10.2 eV lamp was used to monitor soils on-site every 15 minutes as excavation proceeded. A copy of written records of the measurements obtained during the excavation is provided in Appendix B. A tank degassing unit was then deployed by SOLRAC pursuant to SCAQMD Rule 1149 until triple rinsing of the tanks was completed. Triple rinsing was accommodated by creating a two (2) foot by two (2) foot opening in the top of the tank.

The tanks were lifted from the ground under the direction of Inspector H. Dwayne Golden of the Los Angeles City Fire Department and placed directly on a flat bed truck. Following the tank removals, SOLRAC removed associated vapor and product lines.

Three soil samples were collected for each of the diesel and gasoline tanks, and two soil samples for the waste-oil tank. Soil samples were collected by JMM, approximately two (2) feet below the bottom of the tank pits. In addition soil samples (P1 through P17) were collected from underneath pump islands and product piping. The approximate location of each sample point is shown on Figure 2-1. The samples were collected in glass jars, capped, placed on ice and analyzed for EPA Methods 8015(M) and 8020 (BTEX) by on-site GTEL Mobile Laboratories, a California State Toxics Department certified laboratory for hazardous waste analysis. Selected samples for total lead (EPA Method 7420) and semi-volatile organics (EPA Method 8270) were transported to the GTEL stationary laboratory in Torrance, California.

6.0 LABORATORY ANALYSIS

All samples with exceptions of WOT-N, WOT-S, and BACKGROUND, were analyzed for Total Fuel Hydrocarbons (TFH) by EPA Method 8015(M), and Aromatic Volatile Organics (BTEX) by EPA Method 8020. Soil sample WOT-N and WOT-S were analyzed for Total Recoverable Petroleum Hydrocarbons (TPH) EPA Method 418.1 and semi-volatile organics EPA Method 8270. Laboratory results for TFH, BTEX and TPH are tabulated in Table 1 and shown in Figure 6-1. The two soil samples with the highest TFH results (C-1 and P-6); and the BACKGROUND sample were analyzed for Total Lead utilizing EPA Method 8420. These results are tabulated in Table 2. Complete laboratory report and Chain-of-Custody (COC) forms are provided in Appendix C.

As shown in Figure 6-1, 3,300 mg/kg of gasoline was detected in the Eastern corner of the tank pit (sample C-1). The remaining soil samples collected from the bottom of the tank pit did not have contaminants above the detection levels. Soil samples collected to the East of the tank pit (P-9 through P-17; with the exception of P-13) did not have contaminants above the detection levels. P-13 indicated TFH and BTEX results slightly above the detection limits. Soil samples

collected to the South of the tank pit (samples P-1 through P-8) indicated varying levels of gasoline residual underneath the pump islands and product lines. The TFH values ranged from ND to 380 mg/kg.

Soil samples WOT-N and WOT-S indicated concentration levels below the detection limits for all the parameters tested by EPA Methods 418.1 and 8270.

7.0 SOIL DISPOSAL

All soils excavated on-site were transported by Pacific Environmental Management Inc. a registered hazardous waste hauler to the Puente Hill Landfill in Whittier, California. Copies of non-hazardous waste data forms and the county's refuse disposal receipts are provided in Appendix D.

8.0 CONCLUSION AND RECOMMENDATIONS

The removal of the USTs from the subject property was conducted in accordance with current standard industry practices, and applicable rules and regulations. The gasoline and waste oil tank pits were backfilled and compacted with clean imported pea gravel once the new tanks were installed. As documented by this investigation, TFH contaminated soils were encountered in the Eastern corner of the tank pit and underneath the pump islands and product piping to the South of the tank pit. On November 11, 1992, JMM on behalf of UNOCAL reported to the Office of Emergency Services (OES) and the National Response Center (NRC) a possible release of gasoline from the subsurface tanks and lines. The file numbers corresponding to this reported possible release are 26032 and 145820 for OES and NRC, respectively.

JMM recommends further subsurface investigations in the Eastern corner of the tank pit and underneath the pump islands and product lines South of the tank pit. To facilitate anticipated future drilling and sampling underneath the pea gravel bed in the Eastern corner of the tank pit, JMM installed two 16" diameter PVC conductor casings (CC-1 and CC-2) approximately 3 feet apart to a depth of 12 feet bgs (see Figure 8-1). A (24" x 24") traffic rated cover was provided for each casing.

TABLE 1
UNOCAL SERVICE STATION #4357
SUMMARY OF SUBSURFACE TANK REMOVAL SOIL SAMPLE ANALYTICAL RESULTS (mg/kg)
9/22/92

LOG #	Depth (ft)	TPH ¹	BENZENE ²	TOLUENE ²	ETHYL BENZENE ²	XYLENES ²	COMMENTS
A-1	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
A-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
A-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
B-1	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
B-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
B-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
C-1	12	3300	ND<0.5	24	79	580	Bottom sample- gasoline tank
C-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
C-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
P-1	2	ND<10	ND<0.005	ND<0.005	ND<0.005	0.042	Pump island sample
P-2	2	170	0.55	1.3	1.7	1.3	Pump island sample
P-3	2	ND<10	0.014	0.025	0.047	0.33	Product piping sample
P-4	2	280	1.0	4.7	4.8	32	Pump island sample
P-5	2	ND<20	ND<0.010	ND<0.010	ND<0.010	0.066	Product piping sample
P-6	2	380	0.8	10	5.5	50	Pump island sample
P-7	2	18	0.41	0.22	0.49	2.1	Product piping sample
P-8	2	ND<10	ND<0.005	ND<0.005	0.007	0.057	Product piping sample
P-9	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-10	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-11	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-12	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-13	2	17	0.005	0.005	0.031	0.13	Product piping sample
P-14	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-15	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-16	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-17	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample

TABLE 1 (continued)
UNOCAL SERVICE STATION #4357
SUMMARY OF SUBSURFACE TANK REMOVAL SOIL SAMPLE ANALYTICAL RESULTS (mg/kg)
9/22/92

LOG #	TPH ¹	BENZENE ²	TOLUENE ²	ETHYL BENZENE ²	XYLENES ²	COMMENTS
Pile 1	ND<10	ND<0.005	ND<0.005	ND<0.005	0.021	Excavated soil pile
Pile 2-1	140	ND<0.025	0.026	0.075	4.3	Excavated soil pile
Pile 2-2	ND<10	ND<0.005	0.005	ND<0.005	0.12	Excavated soil pile
Pile 2-3	ND<20	ND<0.010	ND<0.010	ND<0.010	0.12	Excavated soil pile
Pile 3	110	ND<0.05	0.11	0.15	4.8	Excavated soil pile
Pile 4-1	12	ND<0.005	ND<0.005	0.016	0.25	Excavated soil pile
Pile 4-2	ND<10	ND<0.005	ND<0.005	ND<0.005	0.075	Excavated soil pile
Pile 4-3	ND<10	ND<0.005	ND<0.005	ND<0.005	0.031	Excavated soil pile
Lab Blank	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Lab Blank sample
WOT-N	ND<10*					
WOT-S	ND<10*					

NOTES: 1 - EPA Method 8015(M).
2 - EPA Method 8020 (BTEX).
* - EPA Method 418.1.

TABLE 2
UNOCAL SERVICE STATION #4357
SUMMARY OF SUBSURFACE TANK REMOVAL SOIL SAMPLE TOTAL LEAD RESULTS (mg/kg)

LOG NO.	TOTAL LEAD ¹	COMMENTS
C-1	6	Bottom soil sample- gasoline tank
P-6	11	Pump island soil sample
BACKGROUND	27	East of the station building- 2' bgs

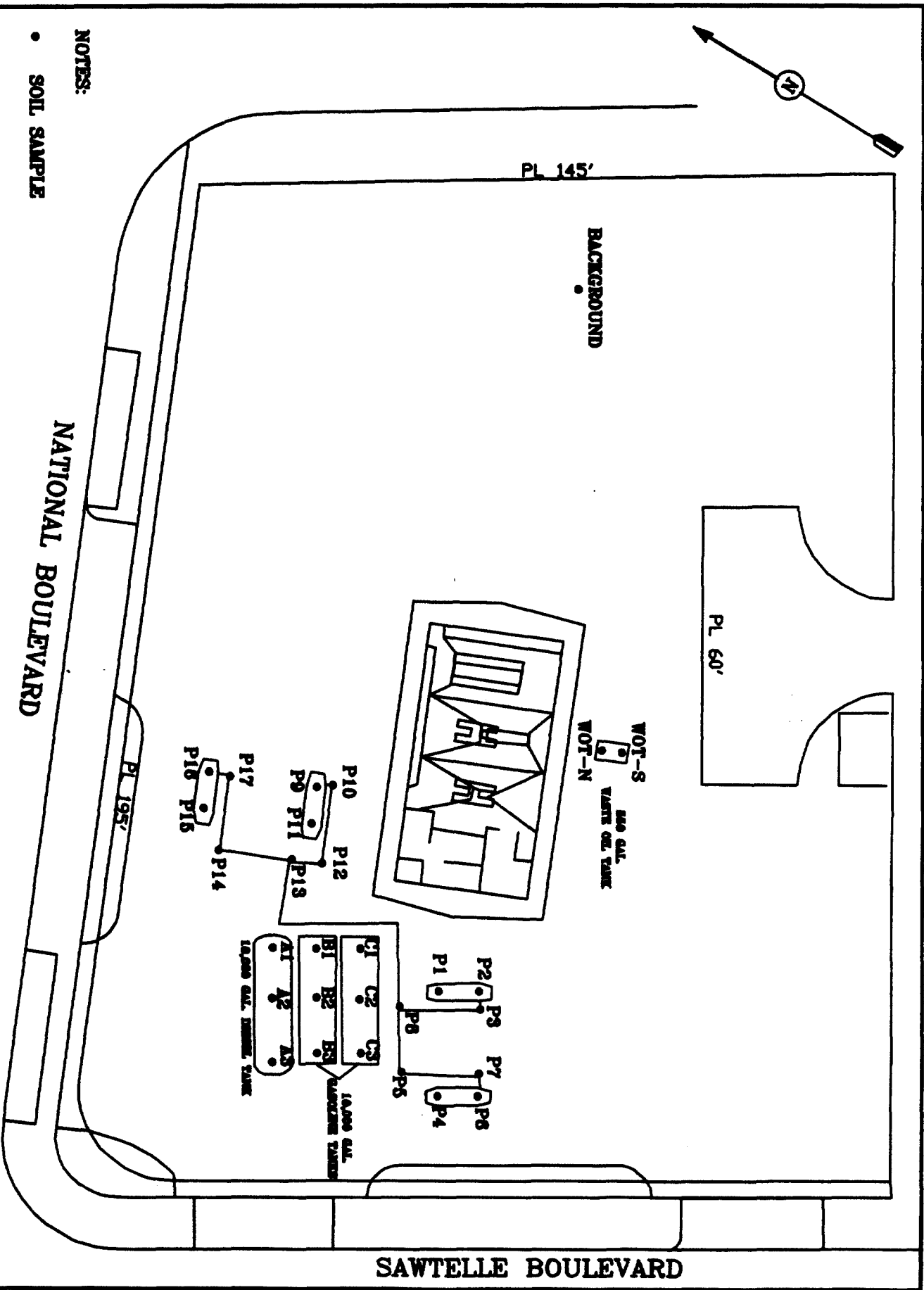
NOTES: 1- EPA Method 7420.



Source: 7.5 Minute Topographic Quadrangle Map
Beverly Hills, California, Dated 1966

0 1000 2000 4000
Scale in Feet

Site Location Map
Figure 1-1



NOTES:

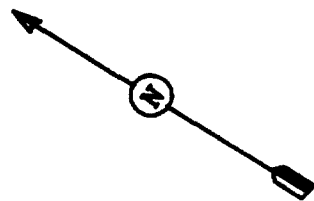
- SOIL SAMPLE

SCALE 27'

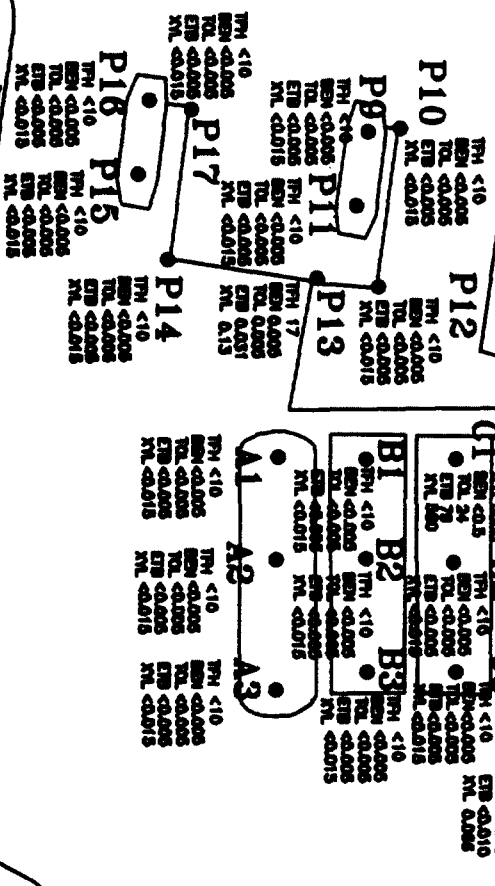
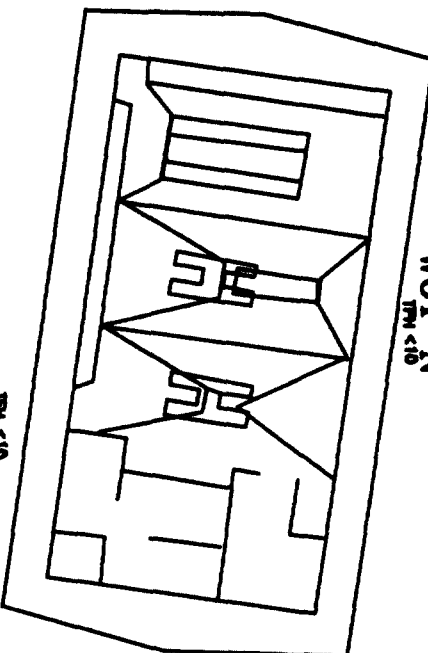
James H. Montgomery
Consulting Engineers, Inc.
Pasadena, California

UNOCAL MARKETING & REFINING
UNOCAL SERVICE STATION NO. 4367
Site Map with Soil Sample Locations

FIGURE 2-1



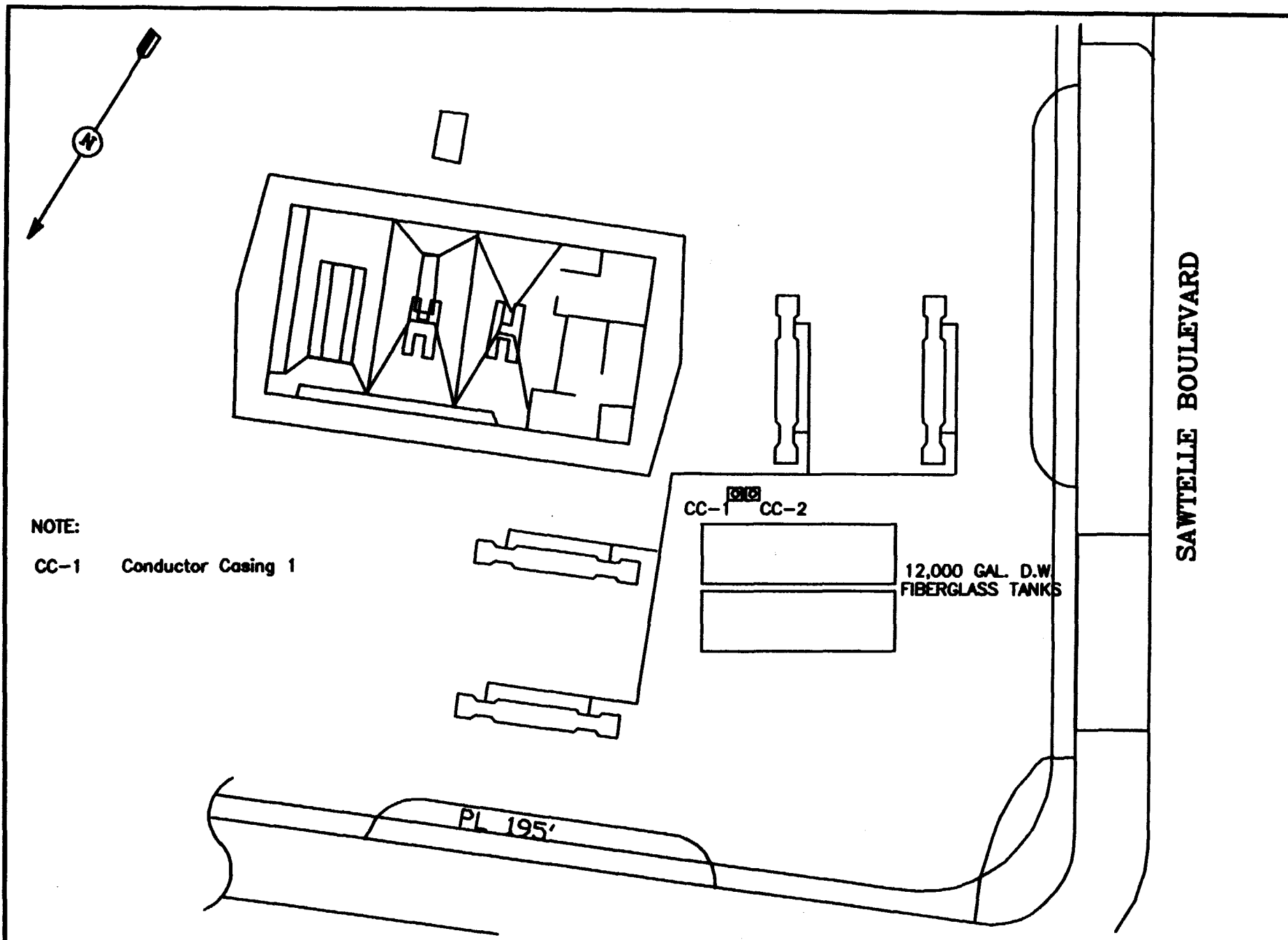
WOT-S
TN <10
WOT-N
TN <10



NOTES:

- SOIL SAMPLE
- TYPE OF QUANTITIES
- BENZENE
- TOLUENE
- ETHYLENE
- NITROGEN
- TYPE (410.1)
- UNITS in mg/kg

SAWTELLE BOULEVARD



NOTE:

CC-1 Conductor Casing 1

CC-1 CC-2

12,000 GAL. D.W.
FIBERGLASS TANKS

PL 195'

SAWTELLE BOULEVARD

SCALE

0 19.3'

James M. Montgomery
Consulting Engineers, Inc.
Pasadena, California

UNOCAL MARKETING & REFINING

UNOCAL SERVICE STATION NO. 4357

New Tanks & Conductor Casing Locations

FIGURE 8-1

APPENDIX A

SCAQMD RULE 1166 PERMIT



**South Coast
AIR QUALITY MANAGEMENT DISTRICT**

21865 E. Copley Drive, Diamond Bar, CA 91765-4182 (714) 396-2000

RECEIVED

DEC 27 1991

December 23, 1991

Union Oil Company of California
911 Wilshire Boulevard Suite 1010
Los Angeles, CA 90017

JIM SCOTT,
Received
DEC 30 1991

Attention: Jim Scott

(213) 977-6252
APPLICATION NO. 259205
COMPANY ID 89221

RULE 1166 CONTAMINATED SOIL MITIGATION PLAN

Reference is made to your Application (A/N 259205) received on December 9, 1991, for the excavation and handling of VOC-contaminated soil at various locations within the South Coast Air Quality Management District.

Your excavation and mitigation plan has been approved under the provisions of Rule 1166 of the Rules and Regulations of the SCAQMD and is subject to the following conditions.

PLAN CONDITIONS:

PROPERTY
OWNER'S
INITIALS

1. AT LEAST 24 HOURS PRIOR TO COMMENCING EXCAVATION OF UNDERGROUND TANKS WHICH HAVE STORED VOLATILE ORGANIC COMPOUNDS (VOC), THE EXECUTIVE OFFICER SHALL BE NOTIFIED OF ALL INFORMATION ITEMS LISTED IN RULE 1166(g)(1)(A) AND THE NAME OF THE COMPANY PERFORMING THE EXCAVATION. [_____]

IF VOC-CONTAMINATED SOIL IS DETECTED, THE EXECUTIVE OFFICER SHALL BE NOTIFIED AGAIN WITHIN 24 HOURS. BOTH NOTIFICATIONS SHALL BE MADE BY CALLING (714) 396-2336, MONDAY THROUGH FRIDAY, BETWEEN 8 A.M. AND 5 P.M.

2. THIS PLAN IS VALID ONLY FOR THE EXCAVATION AND HANDLING OF A MAXIMUM OF 2000 CUBIC YARDS OF VOC-CONTAMINATED SOIL AT EACH SITE. EXCAVATION OF A GREATER AMOUNT REQUIRES SUBMITTAL OF A SITE SPECIFIC RULE 1166 EXCAVATION PLAN. [_____]

Union Oil Company of California
December 23, 1991
259205

- 2 -

3. ALL VOC-CONTAMINATED SOIL SHALL BE DISPOSED, BACKFILLED, OR REMOVED FROM THE SITE WITHIN 40 DAYS AFTER IT HAS BEEN EXCAVATED FROM THE AFFECTED AREAS. [_____]

RECORDS OF DISPOSAL OR TREATMENT OF VOC-CONTAMINATED SOIL SHALL BE MAINTAINED FOR A PERIOD OF TWO (2) YEARS AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.
4. THE OWNER OR OPERATOR SHALL PREPARE A WRITTEN PLAN WHICH INCLUDES METHODS TO TREAT THE VOC-CONTAMINATED SOIL, SCHEDULES TO HAUL THE SOIL AWAY, BACKFILL THE SOIL, OR OTHER MEANS OF DISPOSAL. THE PLAN SHALL ALSO INDICATE THAT THE NECESSARY PERMITS HAVE BEEN OBTAINED OR ARE IN THE PROCESS OF BEING OBTAINED. SUCH A PLAN SHALL BE PREPARED NO LATER THAN 5 DAYS AFTER THE COMPLETION OF THE EXCAVATION, AND SHALL BE MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST. [_____]
5. THE EXCAVATION SHALL BE CONDUCTED IN 50 FT. X 50 FT. OR SMALLER SECTIONS TO MINIMIZE EXPOSURE OF SOIL POTENTIALLY CONTAMINATED WITH VOC. [_____]
6. THE EXCAVATION OPERATOR SHALL HAVE ON SITE AN ORGANIC VAPOR ANALYZER (OVA) USING FLAME IONIZATION OR PHOTO IONIZATION OR OTHER ANALYTICAL METHODS COMPLYING WITH 40 CFR PART 60 APPENDIX A, EPA METHOD 21 SECTION 3.1.1.a., "DETERMINATION OF VOLATILE ORGANIC COMPOUND LEAKS, MONITORING INSTRUMENT SPECIFICATIONS". [_____]
7. THE OVA SHALL BE CAPABLE OF BEING CALIBRATED USING HEXANE AT A RANGE OF 0 PARTS PER MILLION BY VOLUME (PPMV) TO 50 PPMV AND AT A DETECTION RANGE OF AT LEAST 30 PPMV TO 1100 PPMV. THE OVA SHALL BE INITIALLY CALIBRATED USING HEXANE BY THE MANUFACTURER AND CALIBRATED AT LEAST ONCE AT THE BEGINNING OF EACH WORKING DAY WITH THE PROCEDURES SPECIFIED BY THE MANUFACTURER. [_____]
8. DURING EXCAVATION, MONITORING SHALL BE CONDUCTED TO MEASURE VOC'S AT A DISTANCE NO MORE THAN 3 INCHES ABOVE THE FRESHLY DUG SOIL BY USING AN ORGANIC VAPOR ANALYZER (OVA) DESCRIBED UNDER CONDITION 7. THIS MEASUREMENT SHALL BE MADE FOR EVERY LOAD OF SOIL AND SHALL BE TAKEN NO LONGER THAN THREE (3) MINUTES AFTER EACH LOAD OF SOIL IS EXCAVATED. [_____]
9. WRITTEN RECORDS OF OVA MONITORING AND CALIBRATIONS REQUIRED ABOVE SHALL BE KEPT IN A FORMAT APPROVED BY THE DISTRICT. A TYPICAL FORMAT IS ATTACHED WITH THIS PLAN. [_____]
10. VOC-CONTAMINATED SOIL IS A SOIL WHICH REGISTERS 50 PPMV OR MORE WHEN MEASURED WITH AN ORGANIC VAPOR ANALYZER (CALIBRATED USING HEXANE) AT A DISTANCE OF NO MORE THAN THREE INCHES ABOVE EXCAVATED AND EXPOSED SOIL. [_____]

Union Oil Company of California
December 23, 1991
259205

- 3 -

11. IF THE OVA MEASUREMENT IS BETWEEN 50 PPMV AND 1000 PPMV, []
- A) THE WORKING AREA SHALL BE IMMEDIATELY SPRAYED WITH WATER, OR COVERED WITH CLEAN SOIL OR TREATED WITH A DISTRICT APPROVED SUPPRESSANT, AND
 - B) EACH VOC-CONTAMINATED LOAD OF SOIL SHALL BE SPRAYED WITH WATER OR TREATED WITH A DISTRICT APPROVED VAPOR SUPPRESSANT AND BE STOCKPILED SEPARATELY.
12. IF THE OVA MEASUREMENT EQUALS OR IS GREATER THAN 1000 PPMV, []
- A) THE WORKING AREA SHALL BE SPRAYED WITH WATER OR DISTRICT APPROVED VAPOR SUPPRESSANTS OR COVERED WITH AT LEAST 4 INCHES OF CLEAN SOIL, AND
 - B) THE SOIL DUG UNDER THE ABOVE CONDITIONS SHALL BE STORED IN DISTRICT APPROVED CONTAINERS, AND
 - C) IN LIEU OF CONTAINERS, OTHER MITIGATION MEASURES MAY BE SUBSTITUTED WITH PRIOR WRITTEN APPROVAL OF THE EXECUTIVE OFFICER, IF THE OWNER OR OPERATOR CAN DEMONSTRATE THAT AN ALTERNATIVE MEASURE IS EQUALLY OR MORE EFFECTIVE IN REDUCING VOC EMISSIONS. PRIOR TO THE EXECUTIVE OFFICER'S APPROVAL, THE OWNER OR OPERATOR SHALL SUBMIT A COMPREHENSIVE WRITTEN STUDY WHICH COMPARES QUANTITATIVELY THE ESTIMATED VOC EMISSIONS DIFFERENCE BETWEEN THE ALTERNATIVE MITIGATION MEASURES.
13. ALL VOC-CONTAMINATED SOIL SHALL BE STOCKPILED SEPARATELY FROM NON VOC-CONTAMINATED SOIL AND KEPT MOIST, COVERED OR SPRAYED WITH WATER OR WITH A FUME SUPPRESSANT TO PREVENT EMISSIONS OF PARTICULATES OR VOC. []
14. AT THE END OF EACH WORKING DAY, ALL STOCKPILES SHALL BE COVERED WITH A HEAVY DUTY CONTINUOUS PLASTIC SHEET(S), JOINED AT THE SEAMS, AND SECURELY ANCHORED TO PREVENT ANY EXPOSURE OF SOIL TO THE ATMOSPHERE. []
15. A STOCKPILE SHALL NOT CONTAIN MORE THAN 450 CUBIC YARDS OF SOIL. []
16. WITHIN 5 DAYS AFTER THE EXCAVATION IS COMPLETED AT EACH SITE, THE WRITTEN RECORDS UNDER CONDITIONS 4 AND 9 SHALL BE SUBMITTED TO THE DISTRICT AT THE FOLLOWING ADDRESS. []

SCAQMD
ENFORCEMENT DIV.
9150 FLAIR DR.
EL MONTE CA. 91731

Union Oil Company of California
December 23, 1991
259205

- 4 -

17. VOC-CONTAMINATED SOIL SHALL NOT BE SPREAD ON-SITE OR OFF-SITE TO CAUSE THE EVAPORATION OF UNCONTROLLED VOC TO THE ATMOSPHERE. []
18. THIS PLAN IS NOT VALID FOR EXCAVATING VOC-CONTAMINATED SOILS AT LANDFILLS OR SITES USED FOR DISPOSAL OF REFUSE OR OTHER TYPES OF WASTE. []
19. THIS PLAN DOES NOT ALLOW ANY TREATMENT OF VOC-CONTAMINATED SOIL. []
20. A COPY OF THIS PLAN SHALL BE PRESENT AT EACH EXCAVATION SITE DURING ALL SOIL HANDLING AND STORAGE PROCESSES. []
21. THIS PLAN IS NOT VALID UNTIL THE VERIFICATION BELOW IS SIGNED. []

I _____, AM THE OWNER OF THE PROPERTY
LOCATED AT _____
(SITE OF THE EXCAVATION). I VERIFY THAT I HAVE READ,
UNDERSTOOD, AND INITIALED EACH CONDITION OF THIS PLAN.

SIGNED _____

DATE _____

Other governmental agencies may require approval before any excavation begins. It shall be the responsibility of the applicant to obtain that approval. The South Coast Air Quality Management District shall not be responsible or liable for any losses because of measures required or taken pursuant to the requirements of this approved 1166 Contaminated Soil Mitigation Plan.

If you have any questions concerning this plan, please call Mr. Arthur Lawler at (714) 396-2533.

Very truly yours,


George Rhett
Supervising A. Q. Engineer

AL R1166VXE

cc: Rudy Eden, Enforcement, Data Management Branch

- 5 -

DATE: _____

APPENDIX B

EXCAVATION PID MEASUREMENTS

JMM James M. Montgomery
Consulting Engineers, Inc.



September 28, 1992

South Coast Air Quality Management District
P.O. Box 4944
Diamond Bar, California 91765-0944

Attention: Enforcement Div. Toxic Branch
Subject: Unocal Station #4357, 11280 National Blvd. Los Angeles
Subsurface Tank Excavation
1166 Permit Application No. 259205 and ID 89221

Dear Sir:

On behalf of UNOCAL, enclosed please find a copy of written records of the measurements obtained at the above mentioned site during the subsurface tank excavation conducted on September 21 through 24, 1992.

Please do not hesitate to contact me at (818) 568-6948 if you require additional information on this subject.

Sincerely,

JAMES M. MONTGOMERY,
CONSULTING ENGINEERS, INC.

Majid Rasouli

Majid Rasouli
Senior Engineer

cc: J. Adams(UNOCAL)

UNOCAL

UNOCAL CONTAMINATED SOIL TREATMENT/DISPOSAL PLAN

(Submittal to South Coast Air Quality Management District within 5 days of completion of excavation shall fulfill SCAQMD Rule 1166, A/N 259205, Condition 4)

Service Station # 4357

Location: 11280 National Blvd., Los Angeles CA

Unocal Engineer responsible for project: Jim Adams

Phone Number: (818) 854-7096

Office Address: 17700 Castleton St, Suite 500
City Of Industry, CA 91748

Method(s) to be used to treat VOC-contaminated soil on site: Covered by plastic sheets.

Schedule to haul soil away (indicate date, proposed hauler and proposed destination): October 7, 1992
Pacific Environmental to Laidlaw or other
appropriate landfills.

Plans to backfill treated soil or other method of disposal not indicated above: All excavated soils will be disposed off-site.

I have checked the information provided above and believe it to be correct to the best of my knowledge. All necessary permits to conduct the above work have been obtained or are in the process of being obtained.

Majid Rasouli, James M. Montgomery Consulting Engineers 9-28-92

Project Engineer

Date

Majid Rasouli

Union Oil Company of California
December 23, 1991
259205

- 5 -

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
RULE 1166 SOIL MONITORING RECORDS

PAGE 1 of 3

SITE INFORMATION

OWNER: UNOCAL # 4357
ADDRESS: 11280 National Blvd.
CITY: Los Angeles CA
ZIP CODE: _____
DATE OF EXCAVATION: 9-21-92

MONITORING INFORMATION

COMPANY: James M. Montgomery
NAME OF PERSON: Majid Rasouli
MONITOR MFG: Photovac
MODEL NO: Micro Tip MP100
CALIBRATION GAS: 50 ppm Hexane

TIME	VOC CONCENTRATION (ppbv)		COMMENTS
	EACH LOAD AS REMOVED	STOCKPILE SURFACE	
9-21-92 1:50 PM	Ø	Ø	Over the Diesel Tank
2:00	Ø	Ø	
2:10	5.5	14	
2:20	350	68	Started applying water to the area.
2:30	950	150	" " "
2:40	750	145	" " "
2:50	490	128	" " "
3:00	658	89	Stopped for break
3:30	550	410	Sprayed water.
3:40	136	12	" "
3:50	190	50	" "
4:00	20	5	
4:15	15	6	

SIGNATURE: Majid Rasouli

DATE: 9-28-92

Union Oil Company of California
December 23, 1991
259205

- 5 -

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
RULE 1166 SOIL MONITORING RECORDS

PAGE 2 of 3

SITE INFORMATION

OWNER: UNOCAL #4357
ADDRESS: _____
CITY: _____
ZIP CODE: _____
DATE OF EXCAVATION: _____

MONITORING INFORMATION

COMPANY: James M. Montgomery
NAME OF PERSON: MASID RASOULI
MONITOR MFG: _____
MODEL NO: _____
CALIBRATION GAS: _____

TIME	VOC CONCENTRATION (ppbv)		COMMENTS
	EACH LOAD AS REMOVED	STOCKPILE SURFACE	
9/21 4:30	10	5	
4:45	60	5	Sprayed Water
5:00	28	10	
5:15	30	10	
5:30	45	5	
5:45	59	10	Stopped for break.
6:00	112	15	sprayed water
6:15	50	5	" "
6:30	89	10	" "
6:40	65	15	" "
7:00	95	20	" "
			END OF DAY

SIGNATURE: MASID RASOULI

DATE: 9-28-92

Union Oil Company of California
December 23, 1991
259205

- 5 -

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
RULE 1166 SOIL MONITORING RECORDS

PAGE 3 of 3

SITE INFORMATION

OWNER: UNOCAL # 4357
ADDRESS: _____
CITY: _____
ZIP CODE: _____
DATE OF EXCAVATION: _____

MONITORING INFORMATION

COMPANY: James M. Montgomery
NAME OF PERSON: MAJID RAJOUKI
MONITOR MFG: _____
MODEL NO: _____
CALIBRATION GAS: _____

TIME	VOC CONCENTRATION (PPMV)		COMMENTS
	EACH LOAD AS REMOVED	STOCKPILE SURFACE	
9/23 8:15	30	8	Pipe trench excavation
8:30	45	20	
8:45	30	20	
9:00	65	6	Sprayed Water
9:15	35	17	
9:30	42	20	
9:40	48	10	END OF EXCAVATION
7/24 6:30	35	10	Bottom loose soils excavation
6:40	40	5	
6:50	13	9	
7:10	22	6.6	
7:30	16	9	
7:45	26	8	
8:00	9	7	END OF EXCAVATION
8:30	23	10	

SIGNATURE: _____

Mam Rajouki

DATE: 9-28-92

APPENDIX C

**LABORATORY REPORT &
CHAIN-OF-CUSTODY FORMS**

15218

ANALYSIS REQUEST

OTHER

Company Name:

Phone #:

Company Address:

Site location:

Project Manager:

Client Project ID: (#)

I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler Name (Print):

[illegible]

☐ Priority (24 hr)
☐ Expedited (48 hr)
☐ 7 Business Days
 Other _____
☐ Business Days

Special Handling

SPECIAL DETECTION LIMITS

REMARKS

QA / QC LEVEL

BLUE ☐ CLP ☐ OTHER _____

SPECIAL REPORTING REQUIREMENTS

Lab Use Only Lot #

Storage Location:

Work Order #

Relinquished by Sampler:

Date **Time**

Received by:

Relinquished by:

Date **Time**

Received by:

Relinquished by:

Date **Time**

Received by Laboratory:

Waybill #

CUSTODY RECORD

b6A Log number

B C ANALYTICAL

- ☐ 1255 Russell Street, Emeryville, CA 94608 (415) 428-2300
☐ 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
☐ 1200 Pacifico Avenue, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge
GW—Groundwater SO—Soil OT—Other PE—Petroleum

CHAIN OF CUSTODY RECORD

BCA Log Number _____

Client name UNOCIL 4357				Project or PO#		<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);"> Analyses required 1515M 1516 7460 (HCL) Hazardous sample Special handling required </div> <div></div> </div>									
Address				Phone #											
City, State, Zip				Report station MAGID RASOULI											
Lab Sample number	Date sampled	Time sampled	Type* See key below	Sampled by	Number of containers	Remarks									
	9-22			Soil Pile 1	1	α	α								1415 - HSL
				Soil Pile 2-1	1	α	α								"
				Soil Pile 2-2	1	α	α								"
				Soil Pile 2-3	1	α	α								"
				Soil Pile 3	1	α	α								"
				Background	1										7415 - HSL
				A1	1	α	α								"
				A2	1	α	α								"
				A3	1	α	α								"
				B1	1	α	α								"
				B2	1	α	α								"
				B3	1	α	α								"

Signature	Print Name	Company	Date	Time
Relinquished by MAGID RASOULI	Magid Rasouli	JHM	9-22	4:35
Received by SA M	Scott M. Hennen	GTEL	9-22	4:35
Relinquished by				
Received by				
Relinquished by				
Received by Laboratory				

B C ANALYTICAL

- ☐ 1255 Powell Street, Emeryville, CA 94608 (415) 428-2300
☐ 801 Western Avenue, Glendale, CA 91201 (818) 247-5737
☐ 1200 Pacific Avenue, Anaheim, CA 92805 (714) 978-0113

Note: Samples are discarded 30 days after results are reported unless other arrangements are made.
Hazardous samples will be returned to client or disposed of at client's expense.

Disposal arrangements: _____

*KEY: AQ—Aqueous NA—Nonaqueous SL—Sludge
GW—Groundwater SO—Soil OT—Other PE—Petroleum



Southwest Region
20000 / 300 Mariner Drive
Torrance, CA 90503
(310) 371-1044
(800) 727-GTEL
Fax (310) 371-8720

GTEL Client Number: JJM03.UNC03
Project I.D.: UNOCAL
4357
Work Order Number: T209172

September 29, 1992

Mr. Majid Rasouli
James M. Montgomery Consulting Engineers Inc.
301 North Lake Avenue, Suite 600
Pasadena, CA 91101

Dear Mr. Rasouli,

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 9-22-92 under chain-of-custody record P.O. #3400000186.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is certified by the state of California under Certification #E723.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

A handwritten signature in black ink, appearing to read 'Minsoon Song', is written over a horizontal line.

Minsoon Song
Laboratory Director

GTEL Client Number: JJM03.UNC03
 Project I.D.: UNOCAL
 4357
 Work Order Number: T209172

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015^a

GTEL Sample Number		Lab Blank	09172-1A	09172-2A	09172-3A
Client Identification		--	Soil Pile 1	Soil Pile 2-1	Soil Pile 2-2
Date Sampled		--	9-22-92	9-22-92	9-22-92
Date Extracted		--	9-24-92	9-24-92	9-24-92
Date Analyzed		9-24-92	9-24-92	9-24-92	9-24-92
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.025	<0.005
Toluene	0.005	<0.005	<0.005	0.026	0.005
Ethylbenzene	0.005	<0.005	<0.005	0.075	<0.005
Xylene, total	0.015	<0.015	0.021	4.3	0.12
BTEX, total	--	--	0.021	4.4	0.13
TPH as Gasoline	10	<10	<10	140	<10
Dilution Multiplier ^b		1	1	5	1
TFT surrogate ^c , % recovery		100	102	85.5	94.3

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JJM03.UNC03
 Project I.D.: UNOCAL
 4357
 Work Order Number: T209172

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015^a

GTEL Sample Number		09172-4A	09172-5A	09172-6A	09172-7A
Client Identification		Soil Pile 2-3	Soil Pile 3	A 1	A-2
Date Sampled		9-22-92	9-22-92	9-22-92	9-22-92
Date Extracted		9-24-92	9-24-92	9-24-92	9-24-92
Date Analyzed		9-24-92	9-24-92	9-24-92	9-24-92
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.010	<0.05	<0.005	<0.005
Toluene	0.005	<0.010	0.11	<0.005	<0.005
Ethylbenzene	0.005	<0.010	0.15	<0.005	<0.005
Xylene, total	0.015	0.12	4.8	<0.015	<0.015
BTEX, total	--	0.12	5.1	--	--
TPH as Gasoline	10	<20	110	<10	<10
Dilution Multiplier ^b		2	10	1	1
TFT surrogate ^c , % recovery		96.2	95.3	94.6	91.3

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JJM03.UNC03
 Project I.D.: UNOCAL
 4357
 Work Order Number: T209172

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015^a

GTEL Sample Number		09172-9A	09172-10A	09172-11A	09172-12A
Client Identification		A3	B1	B2	B3
Date Sampled		9-22-92	9-22-92	9-22-92	9-22-92
Date Extracted		9-24-92	9-24-92	9-24-92	9-24-92
Date Analyzed		9-24-92	9-24-92	9-24-92	9-24-92
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	<0.015
BTEX, total	--	--	--	--	--
TPH as Gasoline	10	<10	<10	<10	<10
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		91.5	90.1	88.4	90.1

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JJM03.UNC03
 Project I.D.: UNOCAL
 4357
 Work Order Number: T209172

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015a

GTEL Sample Number		09172-13A	09172-14A	09172-15A	
Client Identification		C1	C2	C3	
Date Sampled		9-22-92	9-22-92	9-22-92	
Date Extracted		9-24-92	9-24-92	9-24-92	
Date Analyzed		9-24-92	9-24-92	9-24-92	
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.50	<0.005	<0.005	
Toluene	0.005	24	<0.005	<0.005	
Ethylbenzene	0.005	79	<0.005	<0.005	
Xylene, total	0.015	580	<0.015	<0.015	
BTEX, total	--	680	--	--	
TPH as Gasoline	10	3300	<10	<10	
Dilution Multiplier ^b		100	1	1	
TFT surrogate ^c , % recovery		110	103	100	

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JJM03.UNC03
Project I.D.: UNOCAL
4357
Work Order Number: T209172

ANALYTICAL RESULTS

Total Recoverable Petroleum Hydrocarbons in Soil
EPA 418.1/Standard Methods 503E^a

Sample Identification		Date Sampled	Date Extracted	Date Analyzed	Reporting Limit, mg/kg	Concentration, mg/kg	Percent Solids, %
GTEL No.	Client ID						
09172-16A	WOT-N	9-22-92	9-24-92	9-24-92	10	<10	--
09172-17A	WOT-S	9-22-92	9-24-92	9-24-92	10	<10	--

a. EPA 600/4-79-020, March 1983 revision. Extraction by EPA Method 3550. Results are calculated on a wet weight basis.



Southwest Region
20000 / 300 Mariner Drive
Torrance, CA 90503
(310) 371-1044
(800) 727-GTEL
Fax (310) 371-8720

GTEL Client Number: JJM03.UNC03
Project I.D.: UNOCAL
4357
Work Order Number: T209206

September 29, 1992

Mr. Majid Rasouli
James M. Montgomery Consulting Engineers Inc.
301 North Lake Avenue, Suite 600
Pasadena, CA 91101

Dear Mr. Rasouli,

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 9-24-92 under chain-of-custody records 15217 and 15218.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is certified by the state of California under Certification #E723.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.


Minsoon Song
Laboratory Director

GTEL Client Number: JJM03.UNC03
 Project I.D.: UNOCAL
 4357
 Work Order Number: T209206

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015a

GTEL Sample Number		Lab Blank	09206-1A	09206-2A	09206-3A
Client Identification		--	Pile 4-1	Pile 4-2	Pile 4-3
Date Sampled		--	9-24-92	9-24-92	9-24-92
Date Extracted		--	9-24-92	9-24-92	9-24-92
Date Analyzed		9-24-92	9-24-92	9-24-92	9-24-92
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	0.016	<0.005	<0.005
Xylene, total	0.015	<0.015	0.25	0.075	0.031
BTEX, total	--	--	0.26	0.075	0.031
TPH as Gasoline	10	<10	12	<10	<10
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		100	96.8	97.1	94.1

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JJM03.UNC03
 Project I.D.: UNOCAL
 4357
 Work Order Number: T209206

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015a

GTEL Sample Number		09206-4A	09206-5A	09206-6A	09206-7A
Client Identification		P-1	P-2	P-3	P-4
Date Sampled		9-24-92	9-24-92	9-24-92	9-24-92
Date Extracted		9-24-92	9-24-92	9-24-92	9-24-92
Date Analyzed		9-24-92	9-24-92	9-24-92	9-24-92
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	0.55	0.014	1.0
Toluene	0.005	<0.005	1.3	0.025	4.7
Ethylbenzene	0.005	<0.005	1.7	0.047	4.8
Xylene, total	0.015	0.042	13	0.33	32
BTEX, total	--	0.042	17	0.42	43
TPH as Gasoline	10	<10	170	<10	280
Dilution Multiplier ^b		1	5	1	5
TFT surrogate ^c , % recovery		91.5	97.1	93.9	106

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JJM03.UNC03
 Project I.D.: UNOCAL
 4357
 Work Order Number: T209206

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015^a

GTEL Sample Number		09206-8A	09206-9A	09206-10A	09206-11A
Client Identification		P-5	P-6	P-7	P-8
Date Sampled		9-24-92	9-24-92	9-24-92	9-24-92
Date Extracted		9-24-92	9-24-92	9-24-92	9-24-92
Date Analyzed		9-24-92	9-24-92	9-24-92	9-24-92
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.010	0.80	0.41	<0.005
Toluene	0.005	<0.010	10	0.22	<0.005
Ethylbenzene	0.005	<0.010	5.5	0.49	0.007
Xylene, total	0.015	0.066	50	2.1	0.057
BTEX, total	--	0.066	66	3.3	0.064
TPH as Gasoline	10	<20	380	18	<10
Dilution Multiplier ^b		2	10	1	1
TFT surrogate ^c , % recovery		84.8	104	99.4	97.7

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JJM03.UNC03
 Project I.D.: UNOCAL
 4357
 Work Order Number: T209206

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015a

GTEL Sample Number		09206-12A	09206-13A	09206-14A	09206-15A
Client Identification		P-9	P-10	P-11	P-12
Date Sampled		9-24-92	9-24-92	9-24-92	9-24-92
Date Extracted		9-24-92	9-24-92	9-24-92	9-24-92
Date Analyzed		9-24-92	9-24-92	9-24-92	9-24-92
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	<0.015
BTEX, total	--	--	--	--	--
TPH as Gasoline	10	<10	<10	<10	<10
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		98.4	96.6	88.2	86.5

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JJM03.UNC03
 Project I.D.: UNOCAL
 4357
 Work Order Number: T209206

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015a

GTEL Sample Number		09206-16A	09206-17A	09206-18A	09206-19A
Client Identification		P-13	P-14	P-15	P-16
Date Sampled		9-24-92	9-24-92	9-24-92	9-24-92
Date Extracted		9-24-92	9-24-92	9-24-92	9-24-92
Date Analyzed		9-24-92	9-24-92	9-24-92	9-24-92
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	0.031	<0.005	<0.005	<0.005
Xylene, total	0.015	0.13	<0.015	<0.015	<0.015
BTEX, total	--	0.16	--	--	--
TPH as Gasoline	10	17	<10	<10	<10
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		88.0	85.9	84.5	82.8

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JJM03.UNC03
 Project I.D.: UNOCAL
 4357
 Work Order Number: T209206

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015^a

GTEL Sample Number		09206-20A			
Client Identification		P-17			
Date Sampled		9-24-92			
Date Extracted		9-24-92			
Date Analyzed		9-24-92			
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005			
Toluene	0.005	<0.005			
Ethylbenzene	0.005	<0.005			
Xylene, total	0.015	<0.015			
BTEX, total	--	--			
TPH as Gasoline	10	<10			
Dilution Multiplier ^b		1			
TFT surrogate ^c , % recovery		84.4			

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.



Southwest Region
20000 / 300 Mariner Drive
Torrance, CA 90503
(310) 371-1044
(800) 727-GTEL
Fax (310) 371-8720

GTEL Client Number: JJM03.UNC03
Project I.D.: 3400000186
UNOCAL 4357
Work Order Number: T209230

October 13, 1992

Mr. Majid Rasouli
James Montgomery
301 North Lake Avenue
Pasadena, CA 91109

Dear Mr. Rasouli,

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 9-24-92 under chain-of-custody record 15217.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is certified by the state of California under Certification #E723.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

A handwritten signature in black ink, appearing to read 'Minsoon Song', is written over a horizontal line.

Minsoon Song
Laboratory Director

GTEL Client Number: JJM03.UNC03
Project I.D.: 3400000186
UNOCAL 4357
Work Order Number: T209230

ANALYTICAL RESULTS

Total Lead in Soil by Flame AA
EPA Method 7420^a

Sample Identification		Date Sampled	Date Analyzed	Reporting Limit, mg/kg	Concentration, mg/kg	Percent Solids, %
GTEL No.	Client ID					
09230-01	P-6	9-24-92	10-1-92	5	11	83.8

a. Digested by EPA Method 3050. Results are calculated on a wet weight basis.



Southwest Region

20000 / 300 Mariner Drive
Torrance, CA 90503
(310) 371-1044
(800) 727-GTEL
Fax (310) 371-8720

GTEL Client Number: JJM03.UNC03
Project I.D.: UNOCAL 4357
Work Order Number: T209229

October 13, 1992

Mr. Majid Rasouli
James Montgomery
301 North Lake Avenue
Pasadena, CA 91109

Dear Mr. Rasouli,

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 9-22-92 as per attached chain-of-custody record.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is certified by the state of California under Certification #E723.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

A handwritten signature in black ink, appearing to read 'Minsoon Song', is written over a horizontal line.

Minsoon Song
Laboratory Director

GTEL Client Number: JJM03.UNC03
Project I.D.: UNOCAL 4357
Work Order Number: T209229

ANALYTICAL RESULTS

Total Lead in Soil by Flame AA
EPA Method 7420^a

Sample Identification		Date Sampled	Date Analyzed	Reporting Limit, mg/kg	Concentration, mg/kg	Percent Solids, %
GTEL No.	Client ID					
09229-01	C-1	9-22-92	10-1-92	5	6	88.1

a. Digested by EPA Method 3050. Results are calculated on a wet weight basis.



GTEL Client Number: JMM03UNC03
Project I.D.: UNOCAL 4357
Work Order Number: T209173

Southwest Region
20000 / 300 Mariner Drive
Torrance, CA 90503
(310) 371-1044
(800) 727-GTEL
Fax (310) 371-8720

October 6, 1992

Mr. Majid Rasouli
James M. Montgomery
301 N. Lake Ave.
Pasadena, CA 91109

Dear Mr. Rasouli,

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 9/22/92 under chain-of-custody record.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL is certified by the state of California under Certification #E723.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

A handwritten signature in black ink, appearing to read 'Minsoon Song', is written over a horizontal line.

Minsoon Song
Laboratory Director

GTEL Client Number: JMM03UNC03
 Project I.D.: UNOCAL 4357
 Work Order Number: T209173

ANALYTICAL RESULTS

Volatile Organics in Soil
 Modified EPA Method 8260a

GTEL Sample Number		09173-2	09173-3		
Client Identification		WOT-N	WOT-S		
Date Sampled		9/22/92	9/22/92		
Date Analyzed		9/29/92	9/29/92		
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Dichlorodifluoromethane	0.010	<0.010	<0.010		
Chloromethane	0.010	<0.010	<0.010		
Vinyl Chloride	0.010	<0.010	<0.010		
Bromomethane	0.010	<0.010	<0.010		
Chloroethane	0.010	<0.010	<0.010		
Trichlorofluoromethane	0.005	<0.005	<0.005		
1,1-Dichloroethene	0.005	<0.005	<0.005		
Methylene Chloride	0.005	<0.005	<0.005		
trans-1,2-Dichloroethene	0.005	<0.005	<0.005		
1,1-Dichloroethane	0.005	<0.005	<0.005		
2,2-Dichloropropane	0.005	<0.005	<0.005		
cis-1,2-Dichloroethene	0.005	<0.005	<0.005		
Chloroform	0.005	<0.005	<0.005		
Bromochloromethane	0.005	<0.005	<0.005		
1,1,1-Trichloroethane	0.005	<0.005	<0.005		
1,1-Dichloropropane	0.005	<0.005	<0.005		
Carbon Tetrachloride	0.005	<0.005	<0.005		
Benzene	0.005	<0.005	<0.005		
1,2-Dichloroethane	0.005	<0.005	<0.005		
Trichloroethene	0.005	<0.005	<0.005		
1,2-Dichloropropane	0.005	<0.005	<0.005		
Bromodichloromethane	0.005	<0.005	<0.005		
Dibromomethane	0.005	<0.005	<0.005		
cis-1,3-Dichloropropene	0.005	<0.005	<0.005		

Table continued on next page

GTEL Client Number: JMM03UNC03
 Project I.D.: UNOCAL 4357
 Work Order Number: T209173

ANALYTICAL RESULTS

Volatile Organics in Soil
 Modified EPA Method 8260a

GTEL Sample Number		09173-2	09173-3		
Client Identification		WOT-N	WOT-S		
Date Sampled		9/22/92	9/22/92		
Date Analyzed		9/29/92	9/29/92		
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Toluene	0.005	<0.005	<0.005		
<i>trans</i> -1,2-Dichloropropene	0.005	<0.005	<0.005		
1,1,2-Trichloroethane	0.005	<0.005	<0.005		
1,2-Dibromoethane	0.005	<0.005	<0.005		
Tetrachloroethene	0.005	<0.005	<0.005		
1,3-Dichloropropane	0.005	<0.005	<0.005		
Dibromochloromethane	0.005	<0.005	<0.005		
Chlorobenzene	0.005	<0.005	<0.005		
Ethylbenzene	0.005	<0.005	<0.005		
1,1,1,2-Tetrachloroethane	0.005	<0.005	<0.005		
Xylene (total)	0.010	<0.005	<0.005		
Styrene	0.005	<0.005	<0.005		
Bromoform	0.005	<0.005	<0.005		
Isopropylbenzene	0.005	<0.005	<0.005		
1,1,2,2-Tetrachloroethane	0.005	<0.005	<0.005		
Bromobenzene	0.005	<0.005	<0.005		
1,2,3-Trichloropropane	0.005	<0.005	<0.005		
n-Propylbenzene	0.005	<0.005	<0.005		
2-Chlorotoluene	0.005	<0.005	<0.005		
1,3,0.005-Trimethylbenzene	0.005	<0.005	<0.005		
4-Chlorotoluene	0.005	<0.005	<0.005		
<i>tert</i> -Butylbenzene	0.005	<0.005	<0.005		
1,2,4-Trimethylbenzene	0.005	<0.005	<0.005		
<i>sec</i> -Butylbenzene	0.005	<0.005	<0.005		

Table continued on next page

GTEL Client Number: JMM03UNC03
 Project I.D.: UNOCAL 4357
 Work Order Number: T209173

ANALYTICAL RESULTS

Volatile Organics in Soil
 Modified EPA Method 8260a

GTEL Sample Number		09173-2	09173-3		
Client Identification		WOT-N	WOT-S		
Date Sampled		9/22/92	9/22/92		
Date Analyzed		9/29/92	9/29/92		
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
p-Isopropyltoluene	0.005	<0.005	<0.005		
1,3-Dichlorobenzene	0.005	<0.005	<0.005		
1,4-Dichlorobenzene	0.005	<0.005	<0.005		
n-Butylbenzene	0.005	<0.005	<0.005		
1,2-Dichlorobenzene	0.005	<0.005	<0.005		
1,2-Dibromo-3-chloropropane	0.005	<0.005	<0.005		
1,2,4-Trichlorobenzene	0.005	<0.005	<0.005		
Hexachlorobutadiene	0.005	<0.005	<0.005		
Naphthalene	0.005	<0.005	<0.005		
1,2,3-Trichlorobenzene	0.005	<0.005	<0.005		
Dilution Multiplier ^b		1	1		

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Extraction by EPA Method 5030 (purge and trap).
- Indicates the adjustments made for sample dilution.

GTEL Client Number: JMM03UNC03
 Project I.D.: UNOCAL 4357
 Work Order Number: T209173

ANALYTICAL RESULTS

Semi-Volatile Organics in Soil
 Modified EPA Method 8270^a

GTEL Sample Number		09173-2	09173-3		
Client Identification		WOT-N	WOT-S		
Date Sampled		9/22/92	9/22/92		
Date Extracted		9/30/92	9/30/92		
Date Analyzed		9/30/92	9/30/92		
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Phenol	0.33	<0.33	<0.33		
<i>bis</i> (2-Chloroethyl) Ether	0.33	<0.33	<0.33		
2-Chlorophenol	0.33	<0.33	<0.33		
1,3-Dichlorobenzene	0.33	<0.33	<0.33		
1,4-Dichlorobenzene	0.33	<0.33	<0.33		
Benzyl Alcohol	0.66	<0.33	<0.33		
1,2-Dichlorobenzene	0.33	<0.33	<0.33		
2-Methylphenol	0.33	<0.33	<0.33		
<i>bis</i> (2-Chloroisopropyl) Ether	0.33	<0.33	<0.33		
4-Methylphenol	0.33	<0.33	<0.33		
N-Nitroso-di-n-propylamine	0.33	<0.33	<0.33		
Hexachloroethane	0.33	<0.33	<0.33		
Nitrobenzene	0.33	<0.33	<0.33		
Isophorone	0.33	<0.33	<0.33		
2-Nitrophenol	0.33	<0.33	<0.33		
2,4-Dimethylphenol	0.33	<0.33	<0.33		
Benzoic Acid	1.7	<1.7	<1.7		
<i>bis</i> (2-Chloroethoxy)methane	0.33	<0.33	<0.33		
2,4-Dichlorophenol	0.33	<0.33	<0.33		
1,2,4-Trichlorobenzene	0.33	<0.33	<0.33		

Table continued on next page

GTEL Client Number: JMM03UNC03
 Project I.D.: UNOCAL 4357
 Work Order Number: T209173

ANALYTICAL RESULTS

Semi-Volatile Organics in Soil
 Modified EPA Method 8270a

GTEL Sample Number		09173-2	09173-3		
Client Identification		WOT-N	WOT-S		
Date Sampled		9/22/92	9/22/92		
Date Extracted		9/30/92	9/30/92		
Date Analyzed		9/30/92	9/30/92		
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Naphthalene	0.33	<0.33	<0.33		
4-Chloroaniline	0.66	<0.66	<0.66		
Hexachlorobutadiene	0.33	<0.33	<0.33		
4-Chloro-3-methylphenol	0.66	<0.66	<0.66		
2-Methylnaphthalene	0.33	<0.33	<0.33		
Hexachlorocyclopentadiene	0.33	<0.33	<0.33		
2,4,6-Trichlorophenol	0.33	<0.33	<0.33		
2,4,5-Trichlorophenol	0.33	<0.33	<0.33		
2-Chloronaphthalene	0.33	<0.33	<0.33		
2-Nitroaniline	1.7	<1.7	<1.7		
Dimethyl phthalate	0.33	<0.33	<0.33		
Acenaphthylene	0.33	<0.33	<0.33		
3-Nitroaniline	1.7	<1.7	<1.7		
Acenaphthene	0.33	<0.33	<0.33		
2,4-Dinitrophenol	1.7	<1.7	<1.7		
4-Nitrophenol	1.7	<1.7	<1.7		
Dibenzofuran	0.33	<0.33	<0.33		
2,4-Dinitrotoluene	0.33	<0.33	<0.33		
2,6-Dinitrotoluene	0.33	<0.33	<0.33		
Diethylphthalate	0.33	<0.33	<0.33		

Table continued on next page

GTEL Client Number: JMM03UNC03
 Project I.D.: UNOCAL 4357
 Work Order Number: T209173

ANALYTICAL RESULTS

Semi-Volatile Organics in Soil
 Modified EPA Method 8270a

GTEL Sample Number		09173-2	09173-3		
Client Identification		WOT-N	WOT-S		
Date Sampled		9/22/92	9/22/92		
Date Extracted		9/30/92	9/30/92		
Date Analyzed		9/30/92	9/30/92		
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
4-Chlorophenylphenyl ether	0.33	<0.33	<0.33		
Fluorene	0.33	<0.33	<0.33		
4-Nitroaniline	1.7	<1.7	<1.7		
4,6-Dinitro-2-methylphenol	1.7	<1.7	<1.7		
N-Nitrosodiphenylamine ^b	0.33	<0.33	<0.33		
4-Bromophenyl phenyl ether	0.33	<0.33	<0.33		
Hexachlorobenzene	0.33	<0.33	<0.33		
Pentachlorophenol	1.7	<1.7	<1.7		
Phenanthrene	0.33	<0.33	<0.33		
Anthracene	0.33	<0.33	<0.33		
Di-n-butylphthalate	0.33	<0.33	<0.33		
Fluoranthene	0.33	<0.33	<0.33		
Pyrene	0.33	<0.33	<0.33		
Butylbenzylphthalate	0.33	<0.33	<0.33		
3,3'-Dichlorobenzidine	0.66	<0.66	<0.66		
Benzo[a]anthracene	0.33	<0.33	<0.33		
b/s(2-ethylhexyl)phthalate	0.33	<0.33	<0.33		
Chrysene	0.33	<0.33	<0.33		
Di-n-octyl phthalate	0.33	<0.33	<0.33		
Benzo[b]fluoranthene	0.33	<0.33	<0.33		

Table continued on next page

GTEL Client Number: JMM03UNC03
 Project I.D.: UNOCAL 4357
 Work Order Number: T209173

ANALYTICAL RESULTS

Semi-Volatile Organics in Soil
 Modified EPA Method 8270^a

GTEL Sample Number		09173-2	09173-3		
Client Identification		WOT-N	WOT-S		
Date Sampled		9/22/92	9/22/92		
Date Extracted		9/30/92	9/30/92		
Date Analyzed		9/30/92	9/30/92		
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzo[k]fluoranthene	0.33	<0.33	<0.33		
Benzo[a]pyrene	0.33	<0.33	<0.33		
Indeno[1,2,3-c,d]pyrene	0.33	<0.33	<0.33		
Dibenz[a,h]anthracene	0.33	<0.33	<0.33		
Benzo[g,h,i]perylene	0.33	<0.33	<0.33		
Benzidine	1.7	<1.7	<1.7		
Dilution Multiplier ^c		1	1		
Percent Solids, %		81.8	84.0		

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Extraction by EPA Method 3510. Results are calculated on a wet weight basis.
- Cannot be separated from diphenylamine.
- Indicates the adjustments made for sample dilution.

GTEL Client Number: JMM03UNC03
Project I.D.: UNOCAL 4357
Work Order Number: T209173

ANALYTICAL RESULTS

Total Lead in Soil by Flame AA
EPA Method 7420^a

Sample Identification		Date Sampled	Date Analyzed	Reporting Limit, mg/kg	Concentration, mg/kg	Percent Solids, %
GTEL No.	Client ID					
09173-1	BACKGROUND	9/22/92	10/01/92	5	27	87.4

a. Digested by EPA Method 3050. Results are calculated on a wet weight basis.

APPENDIC D

**NON-HAZARDOUS WASTE DATA FORMS
AND REFUSE DISPOSAL RECEIPTS**

NON-HAZARDOUS WASTE DATA FORM

NO. 15224

EPA I.D. NO. **30023**

NAME Unocal SS#4357-11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst

ADDRESS 911 Wilshire Blvd, Suite 1010

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. _____ VOLUME _____ WEIGHT _____

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER _____

WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS LIST Removal
 COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %

1. Soil _____ 99-100% 6. _____

2. _____ 7. _____

3. _____ 8. _____

4. _____ 9. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

Jim Adams [Signature] 10-30-92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

EPA I.D. NO. **30983610**

NAME Pacific Environmental Management Corporation

ADDRESS 2045 E. Carson Street

CITY, STATE, ZIP Carson, CA 90810

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. _____

SERVICE ORDER NO. _____

PICK UP DATE _____

José Pineda [Signature] 11-03-92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

EPA I.D. NO. **30983610**

NAME Puente Hill Landfill PH #6

ADDRESS 2800 Workman Mill Road

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

DISPOSAL METHOD ☒ LANDFILL ☐ OTHER _____

[Signature] 11/3/92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	2269
CG		RT/CD	HWDF	NONE

1206616

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

TSD FACILITY

1206616	CASH	BF91654	FH	11/03/92	07.22	6	JA
38.69	16.00	22.69	3	\$21.99 PER TON	\$498.95		
						TOTAL AMOUNT	
						\$498.95	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15210

EGS
2nd S

NON-HAZARDOUS WASTE DATA FORM

26

NAME Unocal SS#4357--11280 National Blvd, Culver City
Unocal Hazardous Materials AnalystEPA
I.D.
NO.ADDRESS 911 Wilshire Blvd, Suite 1010PROFILE
NO.CITY, STATE, ZIP Los Angeles, CA 90017PHONE NO. (213) 977-6596CONTAINERS: No. 1VOLUME 16

WEIGHT

TYPE:

☐ TANK
TRUCK☒ DUMP
TRUCK☐ DRUMS☐ CARTONS☐ OTHERWASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE PPMGENERATING PROCESS UST Removal
COMPONENTS OF WASTE PPM1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHERHANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

NAME Pacific Environmental Management CorporationEPA
I.D.
NO.ADDRESS 2045 E. Carson Street

SERVICE ORDER NO.

CITY, STATE, ZIP Carson, CA 90810PICK UP DATE 11-4-92PHONE NO. 310-513-2100

Kerry Gelott

Kerry Gelott

TRUCK, UNIT, I.D. NO. 3205-7616

TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

NAME Puente Hills LandfillEPA
I.D.
NO.ADDRESS 2800 Workman Mill Road☒ LANDFILL ☐ OTHERCITY, STATE, ZIP Whittier, CA 90601PHONE NO. 310-699-3376

TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	22.67
C/D		RT/CO	HWDP	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

LSD FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9221543

0208007	CASH	BP39710	RH	11/04/92	09.51	6	EET
---------	------	---------	----	----------	-------	---	-----

38.67	16.00	22.67	34.99	21.99 PER TON	498.51		
-------	-------	-------	-------	---------------	--------	--	--

TOTAL AMOUNT					\$498.51
--------------	--	--	--	--	----------

- LOAD CODES:**
- 1 - Refuse
 - 2 - Solid Fill
 - 3 - Hard To Handle
 - 4 - Minimum
 - 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

26

NON-HAZARDOUS WASTE DATA FORM

NO. 15205

Unocal SS#:4357--11280 National Blvd, Culver City
NAME Unocal Hazardous Materials Analyst

EPA
I.D.
NO.

ADDRESS 911 Wilshire Blvd, Suite 1010

PROFILE
NO.

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1

VOLUME 164

WEIGHT

TYPE:

☐ TANK TRUCK

☒ DUMP TRUCK

☐ DRUMS

☐ CARTONS

☐ OTHER

WASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE

GENERATING PROCESS UST Removal
COMPONENTS OF WASTE

1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES:

pH 7-10

☒ SOLID

☐ LIQUID

☐ SLUDGE

☐ SLURRY

☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

NAME Pacific Environmental Management Corporation

EPA
I.D.
NO.

ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. 21457

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE 11-3-92

PHONE NO. 310-513-2100

TRUCK UNIT, I.D. NO. 1233 7629

Jim Wellcome

TYPED OR PRINTED FULL NAME & SIGNATURE

11-3-92

DATE

NAME Puente Hills Landfill

EPA
I.D.
NO.

ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

☒ LANDFILL

☐ OTHER

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

BRUCE HASEGAWA

TYPED OR PRINTED FULL NAME & SIGNATURE

11/4/92

DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1208175</u>		S	S	<u>23.01</u>
C/O		RT/CO		HWDP <u>NONE</u>

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

TSO FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9220518

1208175	CASH	BP91839	PH	11/04/92	07.06	6	JA
39.06	16.05	23.01	3	\$21.99 PER TON	\$505.99		
						TOTAL AMOUNT	
						\$505.99	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

Trigera

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15206

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR
TRANSPORTER
TSD FACILITYNAME Unocal SS#:4357--11280 National Blvd, Culver City
Unocal Hazardous Materials AnalystEPA
ID.
NO.ADDRESS 911 Wilshire Blvd, Suite 1010PROFILE
NO.

Authorization: PH102892-1

CITY, STATE, ZIP Los Angeles, CA 90017PHONE NO. (213) 977-6596CONTAINERS: No. 1VOLUME 167

WEIGHT

TYPE:

TANK
TRUCKDUMP
TRUCK

DRUMS



CARTONS



OTHER

WASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE

PPM

%

GENERATING PROCESS UST Removal
COMPONENTS OF WASTE

PPM

%

1. Soil 99-100%

6.

2. _____

8.

3. _____

7.

4. _____

8.

PROPERTIES:

pH 7-10☒ SOLID☐ LIQUID☐ SLUDGE☐ SLURRY☐ OTHERHANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

NAME Pacific Environmental Management CorporationEPA
ID.
NO.ADDRESS 2045 E. Carson Street

SERVICE ORDER NO.

CITY, STATE, ZIP Carson, CA 90810PICK UP DATE 11-3-92PHONE NO. 310-513-2100TRUCK, UNIT, I.D. NO. 1736 7624CHARLES RICKFORDS Charles Rickfords 11-3-92
TYPED OR PRINTED FULL NAME & SIGNATURE DATENAME Puente Hills LandfillEPA
ID.
NO.ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

CITY, STATE, ZIP Whittier, CA 90601☒ LANDFILL ☐ OTHERPHONE NO. 310-699-3376Bruce HARRISON 11/3/92
TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>120325</u>		S	B	<u>21.4</u>
C/O		RT/OD	HW/DF	NONE

DISCREPANCY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REUSE DEPT. SALE IPT 11/21/92

1208219	CASH	BP91840	PH	11/04/92	07.15	6	JH
37.99	16.50	21.49	3	\$21.99 PER TON	\$472.57		
						TOTAL AMOUNT	
						\$472.57	

- LOAD CODES:**
- 1 - Refuse
 - 2 - Solid Fill
 - 3 - Hard To Handle
 - 4 - Minimum
 - 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15188

NON-HAZARDOUS WASTE DATA FORM

NAME Unocal SS#4357--11280 National Blvd, Culver City EPA I.D. NO. 7629

NAME Unocal Hazardous Materials Analyst

ADDRESS 911 Wilshire Blvd, Suite 1010 PROFILE NO. 15188

CITY, STATE, ZIP Los Angeles, CA 90017 PHONE NO. (213) 977-6596

CONTAINERS: No. 1 VOLUME 18 yards WEIGHT _____

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER _____

WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS UST Removal

COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %

1. Soil _____ 99-100% 6. _____

2. _____ 7. _____

3. _____ 8. _____

4. _____ 9. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

Jim Adams 10-30-92

TYPED OR PRINTED FULL NAME & SIGNATURE DATE

NAME Pacific Environmental Management Corporation EPA I.D. NO. 21457

ADDRESS 2045 E. Carson Street SERVICE ORDER NO. 21457

CITY, STATE, ZIP Carson, CA 90810 PICK UP DATE 11-3-92

PHONE NO. 310-513-2100

TRUCK UNIT I.D. NO. 12337629 Sim Wellcome 11-3-92

TYPED OR PRINTED FULL NAME & SIGNATURE DATE

NAME Puente Hill Landfill EPA I.D. NO. PH #6

ADDRESS 2800 Workman Mill Road DISPOSAL METHOD ☒ LANDFILL ☐ OTHER _____

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

Siew 11/3/92

TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS	DISCREPANCY
TRANS		S	B	22.76	
CO		RT/CO	HWDF	NONE	

1206470

COUNTY SANITATION DISTRICTS OF

LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9218878

1206470	CASH	BP91839	PH	11/03/92	06.54	6	JA
38.81	16.05	22.76	3	\$21.99 PER TON	\$500.49		
TOTAL AMOUNT							
						\$500.49	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NON-HAZARDOUS WASTE DATA FORM

NO. 15195

Unocal SS#:4357--11280 National Blvd, Culver City
NAME Unocal Hazardous Materials Analyst

EPA
I.D.
NO.

ADDRESS 911 Wilshire Blvd, Suite 1010

PROFILE
NO.

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1

VOLUME 167

WEIGHT 1

TYPE:

☐ TANK
TRUCK

☒ DUMP
TRUCK

☐ DRUMS

☐ CARTONS

☐ OTHER

WASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE PPM %

GENERATING PROCESS UST Removal
COMPONENTS OF WASTE PPM %

1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES:

pH 7-10 ☒ SOLID

☐ LIQUID

☐ SLUDGE

☐ SLURRY

☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

NAME Pacific Environmental Management Corporation

EPA
I.D.
NO.

ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. 21457

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE 11-03-92

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. 3P91839

Jim Holloway

TYPED OR PRINTED FULL NAME & SIGNATURE

11-3-92

NAME Puente Hill Landfill

EPA
I.D.
NO.

ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

☒ LANDFILL

☐ OTHER

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

CHRIS CAMPBELL

TYPED OR PRINTED FULL NAME & SIGNATURE

11/3/92

GEN	OLD/NEW	L	A	TONS
TRANS <u>1207397</u>		S	B	<u>22.59</u>
CO		RTCD	HWDP	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

SD FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9219794

1207397	CASH	RP91839	PH	11/03/92	10.11	2	IFM
38.64	16.05	22.59	3	\$21.99 PER TON	\$496.75		
						TOTAL AMOUNT	
						\$496.75	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

②

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15223

NON-HAZARDOUS WASTE DATA FORM

NAME Unocal SS# 4357-501289 National Blvd. Culver City
Unocal Hazardous Materials AnalystADDRESS 911 Wilshire Blvd. Suite 1010CITY, STATE, ZIP Los Angeles, CA 90017PHONE NO. (213) 977-6596CONTAINERS: No. 1VOLUME 18.9

WEIGHT _____

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER _____WASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE PPM %GENERATING PROCESS UST Removal
COMPONENTS OF WASTE PPM %1. Soil _____ 99-100%

2. _____

3. _____

4. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.Jim Adams
TYPED OR PRINTED FULL NAME & SIGNATURE10-30-92
DATENAME Pacific Environmental Management CorporationADDRESS 2045 E. Carson StreetCITY, STATE, ZIP Carson, CA 90810PHONE NO. 310-513-2100TRUCK, UNIT, I.D. NO. 1236 7624CHARLES RICKERTS
TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

NAME Puente Hill LandfillADDRESS 2800 Workman Mill RoadCITY, STATE, ZIP Whittier, CA 90601PHONE NO. 310-699-3376Siw...
TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	<u>22.26</u>
CGI		RTCD	HWDP	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

DISPOSAL FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9218900

1206574	CASH	BP91842	PH	11/03/92	07.13	6	JA
38.76	16.50	22.26	3	\$21.99 PER TON	\$489.50		
						TOTAL AMOUNT	
						\$489.50	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15196

NON-HAZARDOUS WASTE DATA FORM

Unocal SS#:4357--11280 National Blvd, Culver City
 NAME Unocal Hazardous Materials Analyst

EPA
I.D.
NO.

ADDRESS 911 Wilshire Blvd, Suite 1010

PROFILE
NO.

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1

VOLUME 164

WEIGHT

TYPE:

☐

TANK

☒

DUMP

☐

DRUMS

☐

CARTONS

☐

OTHER

WASTE DESCRIPTION Non-Hazardous Soil
 COMPONENTS OF WASTE

PPM

%

GENERATING PROCESS UST Removal
 COMPONENTS OF WASTE

PPM

%

1. Soil 99-100%

2.

3.

7.

4.

8.

PROPERTIES:

pH 7-10 ☒ SOLID

☐ LIQUID

☐ SLUDGE

☐ SLURRY

☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
 WASTE AS DESCRIBED IS 100%
 NON-HAZARDOUS.

Jim Adams
 TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92
 DATE

NAME Pacific Environmental Management Corporation

EPA
I.D.
NO.

ADDRESS 2045 E. Carson Street

SERVICE ORDER NO.

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE 11-3-92

PHONE NO. 310-513-2100

TRUCK UNIT, I.D. NO. BP91843

CHARLES RICKETS
 TYPED OR PRINTED FULL NAME & SIGNATURE

11-3-92
 DATE

NAME Puente Hill Landfill

EPA
I.D.
NO.

ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

☒

LANDFILL

☐

OTHER

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

CHRIS CAMPBELL
 TYPED OR PRINTED FULL NAME & SIGNATURE

11/3/92
 DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1207490</u>		S	B	<u>23.37</u>
C/O		RT/OD	HWDP	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

TSD FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9219035

1207490	CASH	BP91842	PH	11/03/92	10.29	6	JA
39.37	16.00	23.37	3	\$21.99 PER TON	\$513.91		
						TOTAL AMOUNT	
						\$513.91	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15199

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

NAME Unocal SS#:4357--11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst

ADDRESS 911 Wilshire Blvd, Suite 1010

CITY, STATE, ZIP Los Angeles, CA 90017 PHONE NO. (213) 977-6596

CONTAINERS: No. 101 VOLUME 101 WEIGHT 101

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER

WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS UST Removal

COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %

1. Soil 99-100% 5.

2. 6.

3. 7.

4. 8.

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

Jim Adams 10-30-92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TRANSPORTER

NAME Pacific Environmental Management Corporation
172 15117 1611

ADDRESS 2045 E. Carson Street

CITY, STATE, ZIP Carson, CA 90810

PHONE NO. 310-513-2100 SERVICE ORDER NO.

BP39710 3205-7617 Kathy Gelatt 11-3-92
 TRUCK UNIT I.D. NO. TYPED OR PRINTED FULL NAME & SIGNATURE DATE

DISPOSAL METHOD

NAME Puente Hills Landfill

ADDRESS 2800 Workman Mill Road ☒ LANDFILL ☐ OTHER

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

CHRIS CAMPBELL 11/3/92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1207612</u>		S	B	<u>2313</u>
CO		RT/CD	HWDF	NONE

DISCREPANCY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9218764

207612	CASH	RF39710	PH	11/03/92	10.55	5	PAH
38.63	15.50	23413	3	\$21.99 PER TON	\$508.63		
						TOTAL AMOUNT	
						\$508.63	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15220

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

Unocal SS#: 4357--11280 National Blvd, Culver City
 NAME Unocal Hazardous Materials Analyst
 ADDRESS 915 Wilshire Blvd, Suite 1010
 CITY, STATE, ZIP Los Angeles, CA 90017
 CONTAINERS: No. 1 VOLUME 48.405 WEIGHT 176.17
 TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER
 WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS UST Removal
 COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %
 1. Soil 99-100% 6. _____
 2. _____ 7. _____
 3. _____ 8. _____
 4. _____
 PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER
 HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.
 THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.
Jim Adams 10-30-92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TRANSPORTER

NAME Pacific Environmental Management Corporation
 ADDRESS 2045 E. Carson Street
 CITY, STATE, ZIP Carson, CA 90810
 PHONE NO. 310-513-2100
 TRUCK, UNIT, I.D. NO. Kelly S. 1st
 TYPED OR PRINTED FULL NAME & SIGNATURE Kelly S. 1st DATE 11-3-92
 SERVICE ORDER NO. 21269
 PICK UP DATE 11-3-92

TSO FACILITY

NAME Puente Hill Landfill PH #6
 ADDRESS 2800 Workman Mill Road
 CITY, STATE, ZIP Whittier, CA 90601
 PHONE NO. 310-699-3376
 TYPED OR PRINTED FULL NAME & SIGNATURE Gene Latt DATE 11/3/92
 DISPOSAL METHOD ☒ LANDFILL ☐ OTHER

GEN	OLD/NEW	L	A	TONS <u>22.24</u>
TRANS		S	B	
CO		RT/CO	HWDP NONE	

1206657

DISCREPANCY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9218913

0706657	CASH	BP39710	PH	11/03/92	07.31	6	JA
---------	------	---------	----	----------	-------	---	----

32.79	15.50	22.29	3	\$21.99 PER TON	\$490.16		
-------	-------	-------	---	-----------------	----------	--	--

						TOTAL AMOUNT	
--	--	--	--	--	--	--------------	--

						\$490.16	
--	--	--	--	--	--	----------	--

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT.

NO. 15197

NON-HAZARDOUS WASTE DATA FORM

NAME Unocal SS#4357--11280 National Blvd, Culver City EPA I.D. NO. [REDACTED]
Unocal Hazardous Materials Analyst
 ADDRESS 911 Wilshire Blvd, Suite 1010 PROFILE NO. [REDACTED]
 CITY, STATE, ZIP Los Angeles, CA 90017 PHONE NO. (213) 977-6596

CONTAINERS: No. 1 VOLUME 16 WEIGHT

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER

WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS UST Removal
 COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %

1. Soil 99-100% 5.

2. 6.

3. 7.

4. 8.

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

NAME Pacific Environmental Management Corporation EPA I.D. NO. [REDACTED]

ADDRESS 2045 E. Carson Street SERVICE ORDER NO.

CITY, STATE, ZIP Carson, CA 90810 PICK UP DATE

PHONE NO. 310-513-2100

TRUCK UNIT I.D. NO. BP91846 RICHARD HENDERSON 11/03/92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

NAME Puente Hill Landfill EPA I.D. NO. [REDACTED]

ADDRESS 2800 Workman Mill Road DISPOSAL METHOD ☒ LANDFILL ☐ OTHER

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

CHRIS CAMPBELL Chris Campbell 11/3/92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1207555</u>		S	B	<u>22.26</u>
C/O		RT/CO	HWDP	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

DISPOSAL FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9219045

1207555	CASH	BF91846	PH	11/03/92	10.45	6	JA
38.70	16.50	22.20	3	\$21.99 PER TON	\$488.18		
TOTAL AMOUNT							
						\$488.18	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15188

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

NAME Unocal SS#4357--11280 National Blvd, Culver City
Unocal Hazardous Materials AnalystEPA
I.D.
NO.ADDRESS 911 Wilshire Blvd, Suite 1010PROFILE
NO.CITY, STATE, ZIP Los Angeles, CA 90017PHONE NO. (213) 977-6596

CONTAINERS: No. _____ VOLUME _____ WEIGHT _____

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER _____WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS UST Removal
COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.Jim Adams
TYPED OR PRINTED FULL NAME & SIGNATURE10-30-92
DATE

TRANSPORTER

NAME Pacific Environmental Management CorporationEPA
I.D.
NO.ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. _____

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE _____

PHONE NO. 310-513-2100TRUCK, UNIT, I.D. NO. 1240 7627Richard Levenson
TYPED OR PRINTED FULL NAME & SIGNATURE11/3/92
DATENAME Puente Hill Landfill PH #6EPA
I.D.
NO.ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

CITY, STATE, ZIP Whittier, CA 90601☒ LANDFILL ☐ OTHER _____PHONE NO. 310-699-3376Siew
TYPED OR PRINTED FULL NAME & SIGNATURE11/3/92
DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	<u>23.44</u>
C/O		RT/CD	HW/CP	NONE

DISCREPANCY

1206678

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9218916

120667B	CASH	BP91846	FH	11/03/92	07.36	6	JA
39.44	16.00	23.44	3	\$21.99 PER TON	\$515.45		
						TOTAL AMOUNT	
						\$515.45	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15190

NON-HAZARDOUS WASTE DATA FORM

Unocal SS#: 4357--11280 National Blvd, Culver City
 NAME Unocal Hazardous Materials Analyst

EPA
I.D.
NO.ADDRESS 911 Wilshire Blvd, Suite 1010PROFILE
NO.

Authorization: PH102892-1

CITY, STATE, ZIP Los Angeles, CA 90017PHONE NO. (213) 977-6596CONTAINERS: No. 1VOLUME 167

WEIGHT

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHERWASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE PPM %GENERATING PROCESS UST Removal
COMPONENTS OF WASTE PPM %1. Soil 99-100%

5. _____

2. _____ 6. _____

3. _____ 7. _____

4. _____ 8. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHERHANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
 WASTE AS DESCRIBED IS 100%
 NON-HAZARDOUS.

Jim Adams
 TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92
 DATE

NAME Pacific Environmental Management CorporationEPA
I.D.
NO.ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. _____

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE _____

PHONE NO. 310-513-2100TRUCK UNIT, I.D. NO. 1257/4618

Ed Doring
 TYPED OR PRINTED FULL NAME & SIGNATURE

11/3/92
 DATE

NAME Puente Hill LandfillEPA
I.D.
NO.ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

☒ LANDFILL ☐ OTHERCITY, STATE, ZIP Whittier, CA 90601PHONE NO. 310-699-3376

Sierra
 TYPED OR PRINTED FULL NAME & SIGNATURE

11/3/92
 DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	21.87
C/O		RT/CD	HWDF	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

TSD FACILITY

1206711

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9218920

WASTE	CASH	RP91843	PH	11/03/92	07:43	6	JAN
-------	------	---------	----	----------	-------	---	-----

\$116.50	21.87	73	\$21.99 PER TON	\$480.92			
----------	-------	----	-----------------	----------	--	--	--

				TOTAL AMOUNT			
				\$480.92			

- LOAD CODES:**
- 1 - Refuse
 - 2 - Solid Fill
 - 3 - Hard To Handle
 - 4 - Minimum
 - 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT.

NO. 15198

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

Unocal SS#:4357--11280 National Blvd, Culver City
 NAME Unocal Hazardous Materials Analyst

EPA
I.D.
NO.

ADDRESS 911 Wilshire Blvd, Suite 1010

PROFILE
NO.

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596CONTAINERS: No. 1VOLUME 164

WEIGHT

TYPE:

☐TANK
TRUCK☒DUMP
TRUCK☐

DRUMS

☐

CARTONS

☐

OTHER

WASTE DESCRIPTION

Non-Hazardous Soil

GENERATING PROCESS

UST Removal

COMPONENTS OF WASTE

COMPONENTS OF WASTE

PPM

%

1. Soil 99-100%

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

PROPERTIES:

pH 7-10☒

SOLID

☐

LIQUID

☐

SLUDGE

☐

SLURRY

☐

OTHER

HANDLING INSTRUCTIONS:

Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
 WASTE AS DESCRIBED IS 100%
 NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

TRANSPORTER

NAME Pacific Environmental Management CorporationEPA
I.D.
NO.ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. _____

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE _____

PHONE NO. 310-513-2100TRUCK, UNIT, I.D. NO. BP91843

TYPED OR PRINTED FULL NAME & SIGNATURE

EPA
I.D.
NO.NAME Puente Hills Landfill

DISPOSAL METHOD

ADDRESS 2800 Workman Mill Road☒

LANDFILL

☐

OTHER

CITY, STATE, ZIP Whittier, CA 90601PHONE NO. 310-699-3376

TYPED OR PRINTED FULL NAME & SIGNATURE

CHRIS CAMPBELL Chris Campbell 11/3/92

DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1207580</u>		S	B	<u>72.10</u>
CQ		RT/CD	HWDF	NONE

DISCREPANCY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9219048

1207580	CASH	RF91843	PH	11/03/92	10.49	6	JA
38.60	16.50	22.10	3	\$21.98 PER TON	\$485.98		
TOTAL AMOUNT							
						\$485.98	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15191

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

NAME Unocal SS#:4357--11280 National Blvd, Culver City
Unocal Hazardous Materials AnalystEPA
I.D.
NO.ADDRESS 911 Wilshire Blvd, Suite 1010PROFILE
NO.CITY, STATE, ZIP Los Angeles, CA 90017PHONE NO. (213) 977-6596CONTAINERS: No. 1VOLUME 167

WEIGHT

TYPE:

☐TANK
TRUCK☒DUMP
TRUCK☐

DRUMS

☐

CARTONS

☐

OTHER

WASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE PPM %GENERATING PROCESS UST Removal
COMPONENTS OF WASTE PPM %1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES:

pH 7-10 ☒ SOLID☐ LIQUID☐ SLUDGE☐ SLURRY☐ OTHERHANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.Jim Adams
TYPED OR PRINTED FULL NAME & SIGNATURE10-30-92
DATE

TRANSPORTER

NAME Pacific Environmental Management CorporationEPA
I.D.
NO.ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. _____

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE _____

PHONE NO. 310-513-2100TRUCK UNIT, I.D. NO. 124/ 7630Pick Scott Rick Scott
TYPED OR PRINTED FULL NAME & SIGNATURE11/3/92
DATENAME Puente Hill LandfillEPA
I.D.
NO.ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

☒

LANDFILL

☐

OTHER

CITY, STATE, ZIP Whittier, CA 90601PHONE NO. 310-699-3376Brewer
TYPED OR PRINTED FULL NAME & SIGNATURE11/3/92
DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	2131E
C/O		RT/CO	HWDF	NONE

DISCREPANCY

TSD FACILITY

51998187006	21.31	32.79 PER TON	\$468.61E		
-------------	-------	---------------	-----------	--	--

TOTAL AMOUNT

Use
lid Rll
ard To Handle
imum
on Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15193

NON-HAZARDOUS WASTE DATA FORM

NAME Unocal SS#:4357--11280 National Blvd, Culver City
Unocal Hazardous Materials AnalystEPA
I.D.
NO.ADDRESS 911 Wilshire Blvd, Suite 1010PROFILE
NO.CITY, STATE, ZIP Los Angeles, CA 90017PHONE NO. (213) 977-6596CONTAINERS: No. 1VOLUME 161

WEIGHT

TYPE:

☐ TANK
TRUCK☒ DUMP
TRUCK☐ DRUMS☐ CARTONS☐ OTHERWASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE PPM %GENERATING PROCESS UST Removal
COMPONENTS OF WASTE PPM %1. Soil 99-100%
10² 15173 1632

2. _____

3. _____

4. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHERHANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

NAME Pacific Environmental Management CorporationEPA
I.D.
NO.ADDRESS 2045 E. Carson Street

SERVICE ORDER NO.

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE

PHONE NO. 310-513-2100BPE91838
TRUCK UNIT, I.D. NO. 1232/1637DANIEL D. SANCHEZ
TYPED OR PRINTED FULL NAME & SIGNATURE11-3-92
DATENAME Puente Hill LandfillEPA
I.D.
NO.ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

CITY, STATE, ZIP Whittier, CA 90601☒ LANDFILL ☐ OTHERPHONE NO. 310-699-3376CHRIS CAMPBELL
TYPED OR PRINTED FULL NAME & SIGNATURE Chris Campbell 11/3/92
DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1207123</u>		S	B	<u>21.98</u>
CO		RT/CO	HWDF	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

TSD FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9218990

1207123	CASH	BP91838	FH	11/03/92	09.18	6	JA
38.48	16.50	21.98	3	\$21.99 PER TON	\$483.34		
						TOTAL AMOUNT	
						\$483.34	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NON-HAZARDOUS WASTE DATA FORM

NO. 15194

TO BE COMPLETED BY GENERATOR

NAME Unocal SS#:4357--11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst

EPA
I.D.
NO.

ADDRESS 911 Wilshire Blvd, Suite 1010

PROFILE
NO.

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1

VOLUME 16Y

WEIGHT

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER

WASTE DESCRIPTION Non-Hazardous Soil
 COMPONENTS OF WASTE PPM %

GENERATING PROCESS 11ST Removal
 COMPONENTS OF WASTE PPM %

1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER Heavy Metals

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92
DATE

TRANSPORTER

NAME Pacific Environmental Management Corporation

EPA
I.D.
NO.

ADDRESS 2045 E. Carson Street

SERVICE ORDER NO.

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE

PHONE NO. 310-513-2100

BP91656
TRUCK, UNIT, I.D. NO. 1231/7631

303743 Peter M. Linden Peter M. Linden
TYPED OR PRINTED FULL NAME & SIGNATURE

11-3-92
DATE

NAME Puente Hill Landfill

EPA
I.D.
NO.

ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

CITY, STATE, ZIP Whittier, CA 90601

☒ LANDFILL ☐ OTHER

PHONE NO. 310-699-3376

CHRIS CAMPBELL Chris Campbell
TYPED OR PRINTED FULL NAME & SIGNATURE

11/3/92
DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1207366</u>		S	B	<u>22.91</u>
CO		RT/CO	HWOF	NONE

DISCREPANCY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9219015

1207366	CASH	BF91656	PH	11/03/92	10.04	6	JA
38.91	16.00	22.91	3	\$21.99 PER TON	\$503.79		
TOTAL AMOUNT							
						\$503.79	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non Hazardous liquid

IF TOTAL AMOUNT IS NOT COMPUTED. PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15214

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

Unocal SS#:4357--11280 National Blvd, Culver City
 NAME Unocal Hazardous Materials Analyst
 ADDRESS 911 Wilshire Blvd, Suite 1010
 CITY, STATE, ZIP Los Angeles, CA 90017 PHONE NO. (213) 977-6596
 CONTAINERS: No. 1 VOLUME 16X WEIGHT _____
 TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER _____
 WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS UST Removal
 COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %
 1. Soil _____ 99-100% 5. _____
 2. _____ 6. _____
 3. 19014 7617 7. _____
 4. _____ 8. _____
 PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____
 HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.
 THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.
Jim Adams 10-30-92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TRANSPORTER

Pacific Environmental Management Corporation
 NAME _____
 ADDRESS 2045 E. Carson Street SERVICE ORDER NO. _____
 CITY, STATE, ZIP Carson, CA 90810 PICK UP DATE _____
 PHONE NO. 310-513-2100
 TRUCK, UNIT, I.D. NO. 8P91635 Harry James Wallace Harry James Wallace
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TSD FACILITY

Puente Hill Landfill
 NAME _____
 ADDRESS 2800 Workman Mill Road ☒ LANDFILL ☐ OTHER _____
 CITY, STATE, ZIP Whittier, CA 90601
 PHONE NO. 310-699-3376
CHRIS CAMPBELL 11/3/92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1207234</u>		S	B	<u>22.76</u>
C/O		RT/CO	HWDF	NONE

DISCREPANCY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY REFUSE DISPOSAL RECEIPT 9219011

1207234	CASH	BP91655	PH	11/03/92	09.40	6	JA
3896	16.20	22176	3	\$21.99 PER TON	\$500.49		
						TOTAL AMOUNT	
						\$500.49	
LOAD CODES:		<p>1 - Refuse</p> <p>2 - Solid Fill</p> <p>3 - Hard To Handle</p> <p>4 - Minimum</p> <p>5 - Non-Hazardous Liquid</p>					
		<p>IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE RETURN TO SCALE FOR WEIGHOUT.</p> <p>THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.</p> <p>PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT</p>					

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

TRANSPORTER

3D FACILITY

120 6698

DISCREPANCY

9218919

TOTAL AMOUNT

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

**THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT**

NO. 15200

NON-HAZARDOUS WASTE DATA FORM

Unocal SS#4357--11280, National Blvd, Culver City
 NAME Unocal Hazardous Materials Analyst

EPA
I.D.
NO.PROFILE
NO.ADDRESS 911 Wilshire Blvd, Suite 1010CITY, STATE, ZIP Los Angeles, CA 90017PHONE NO. (213) 977-6596CONTAINERS: No. 1VOLUME 18.7

WEIGHT

TYPE:

☐ TANK
TRUCK☒ DUMP
TRUCK☐ DRUMS☐ CARTONS☐ OTHERWASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTEGENERATING PROCESS UST Removal
COMPONENTS OF WASTE1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHERHANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
 WASTE AS DESCRIBED IS 100%
 NON-HAZARDOUS.

Jim Adams
 TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92
 DATE

NAME Pacific Environmental Management CorporationEPA
I.D.
NO.ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. _____

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE _____

PHONE NO. 310-513-2100TRUCK UNIT, I.D. NO. BP91841
1235 7633

DONALD D. JEWELL
 TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

NAME Puente Hills LandfillEPA
I.D.
NO.ADDRESS 2800 Workman Mill RoadDISPOSAL METHOD
☒ LANDFILL ☐ OTHERCITY, STATE, ZIP Whittier, CA 90601PHONE NO. 310-699-3376

CHRIS CAMPBELL
 TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1207674</u>		S	B	<u>21.90</u>
C/O		RT/CO	HWDF	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

TSD FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9219066

1207674	CASH	BF91841	PH	11/03/92	11.08	6	JA
38.40	16.50	21.90	3	\$21.99 PER TON	\$481.58		
						TOTAL AMOUNT	
						\$481.58	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15192

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

Unocal SS#:4357--11280 National Blvd, Culver City
NAME Unocal Hazardous Materials AnalystEPA
I.D.
NO.

310-513-2100

ADDRESS 911 Wilshire Blvd, Suite 1010PROFILE
NO.

Authorization: PH102892-1

CITY, STATE, ZIP Los Angeles, CA 90017PHONE NO. (213) 977-6596CONTAINERS: No. 1VOLUME 161

WEIGHT

TYPE:

☐ TANK TRUCK☒ DUMP TRUCK☐ DRUMS☐ CARTONS☐ OTHERWASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE PPM %GENERATING PROCESS 11ST Removal
COMPONENTS OF WASTE PPM %1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHERHANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.Jim Adams
TYPED OR PRINTED FULL NAME & SIGNATURE10-30-92
DATE

TRANSPORTER

NAME Pacific Environmental Management CorporationEPA
I.D.
NO.ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. _____

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE _____

PHONE NO. 310-513-2100TRUCK, UNIT, I.D. NO. 8P91649Paul Turner
TYPED OR PRINTED FULL NAME & SIGNATURE11-3-92
DATENAME Puente Hill LandfillEPA
I.D.
NO.ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

☒ LANDFILL ☐ OTHERCITY, STATE, ZIP Whittier, CA 90601PHONE NO. 310-699-3376CHRIS CAMPBELL
TYPED OR PRINTED FULL NAME & SIGNATURE11/3/92
DATE

TSD FACILITY

GEN	OLD/NEW	L	A	TONS
TRANS <u>1207224</u>		S	B	<u>2258</u>
CO		RTCD	HWDF	NONE

DISCREPANCY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9219010

1207224	CASH	BP91649	PH	11/03/92	07.38	6	JA
38.88	16.00	22.88	3	\$21.99 PER TON	\$503.13		
						TOTAL AMOUNT	
						\$503.13	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15218

NON-HAZARDOUS WASTE DATA FORM

NAME Unocal SS#:4357--11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst

ADDRESS 911 Wilshire Blvd, Suite 1010

CITY, STATE, ZIP Los Angeles, CA 90017 PHONE NO. (213) 977-6596

CONTAINERS: No. 1 VOLUME 16.4 WEIGHT _____

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER _____

WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS UST Removal

COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %

1. Soil 99-100% 6. _____

2. _____ 7. _____

3. _____ 8. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

Jim Adams 10-30-92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

NAME Pacific Environmental Management Corporation

ADDRESS 2045 E. Carson Street

CITY, STATE, ZIP Carson, CA 90810

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. 1240-7622 Richard Henderson 11/6/92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

NAME Puente Hills Landfill PH # 6

ADDRESS 2800 Workman Mill Road

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

Giew 11/4/92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	21.43
CID		RTCD	HWDF	NONE

1204347

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

TSD FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9220424

1209347	CASH	BP91653	RH	11/04/92	10.57	5	PAH
37.93	16.50	21.43	3	\$21.99 PER TON	\$471.25		
						TOTAL AMOUNT	
						\$471.25	

DAD CODES:
Refuse
Solid Refuse
Hard To Handle
Minimum
Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15215

NON-HAZARDOUS WASTE DATA FORM

Unocal SS#:4357--11280 National Blvd, Culver City
 NAME Unocal Hazardous Materials Analyst

EPA
I.D.
NO.

ADDRESS 911 Wilshire Blvd, Suite 1010

PROFILE
NO.

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1

VOLUME 8 yds

WEIGHT

TYPE:

TANK
TRUCKDUMP
TRUCK

DRUMS



CARTONS



OTHER

WASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE PPM %GENERATING PROCESS LIST Removal
COMPONENTS OF WASTE PPM %

1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES:

pH 7-10



SOLID



LIQUID



SLUDGE



SLURRY



OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
 WASTE AS DESCRIBED IS 100%
 NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

NAME Pacific Environmental Management Corporation

EPA
I.D.
NO.

ADDRESS 2045 E. Carson Street

SERVICE ORDER NO.

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE 11-16-92

PHONE NO. 310-513-2100

CHARLES RICKERTS Charles Rickerts
 Rick Scott Rick Scott 11/16/92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TRUCK, UNIT, I.D. NO. 3210 7631

NAME Puente Hills Landfill

EPA
I.D.
NO.

DISPOSAL METHOD

ADDRESS 2800 Workman Mill Road



LANDFILL



OTHER

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

ARON B. PEREZ JR. Aron B. Perez Jr. 14 NOV 92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS 1224917		S	B	
C/D		RT/CO	HWDP	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

TSD FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY REFUSE DISPOSAL RECEIPT

1224917	CASH	BP39693	PH	11/18/92	10-11-15	EET
---------	------	---------	----	----------	----------	-----

27.66	16.50	11.13	3	\$21.99 PER TON	\$245.41	
-------	-------	-------	---	-----------------	----------	--

TOTAL AMOUNT

\$245.41

LOAD CODES:

- 1. Refuse
- 2. Solid PG
- 3. Hard to Handle
- 4. Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15202

NON-HAZARDOUS WASTE DATA FORM

Unocal SS#4357--11280 National Blvd, Culver City
 NAME Unocal Hazardous Materials Analyst

EPA
I.D.
NO.

ADDRESS 911 Wilshire Blvd, Suite 1010

PROFILE
NO.

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1

WEIGHT

TYPE:

TANK
TRUCKDUMP
TRUCK

DRUMS



CARTONS



OTHER

WASTE DESCRIPTION Non-Hazardous Soil
 COMPONENTS OF WASTE

GENERATING PROCESS UST Removal
 COMPONENTS OF WASTE

1. Soil 99-100%

5. _____

2. _____

6. _____

3. _____

7. _____

4. _____

8. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
 WASTE AS DESCRIBED IS 100%
 NON-HAZARDOUS.

Jim Adams
 TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92
 DATE

NAME Pacific Environmental Management Corporation

EPA
I.D.
NO.

ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. 1

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. B37 7032
Don Smith
 TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

NAME Puente Hills Landfill

EPA
I.D.
NO.

ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD



LANDFILL



OTHER

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

Arthur B. Perry Jr.
 TYPED OR PRINTED FULL NAME & SIGNATURE

Arthur B. Perry Jr. 14 NOV 92
 DATE

GEN	OLD/NEW	L	A	TONS 20.77
TRANS <u>1224839</u>		S	B	
C/O		RT/CD	HW/OF NONE	

DISCREPANCY

 TO BE COMPLETED BY GENERATOR
 TRANSPORTER
 TO FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY REFUSE DISPOSAL RECEIPT

1224889	CASH	BP39711	PH	11/14/92	09:55	FEET
---------	------	---------	----	----------	-------	------

36.77	16.00	20.77	3	\$21.99 PER TON	\$456.73
-------	-------	-------	---	-----------------	----------

TOTAL AMOUNT

UNPAID #1815

\$456.73

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

4. BP39691

NO. 15207

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

NAME Unocal SS#4357--11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst

EPA
I.D.
NO.

303 743

ADDRESS 911 Wilshire Blvd, Suite 1010

PROFILE
NO.

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1

VOLUME 164

WEIGHT

TYPE:

☐ TANK TRUCK

☒ DUMP TRUCK

☐ DRUMS

☐ CARTONS

☐ OTHER

WASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE

GENERATING PROCESS UST Removal
COMPONENTS OF WASTE

1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

TRANSPORTER

NAME Pacific Environmental Management Corporation

EPA
I.D.
NO.

ADDRESS 2045 E. Carson Street

SERVICE ORDER NO.

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. 1231/7631

Peter M. Linde

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

TSB FACILITY

NAME Puente Hills Landfill

EPA
I.D.
NO.

ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

☒ LANDFILL

☐ OTHER

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

Angela B. DeWitt

TYPED OR PRINTED FULL NAME & SIGNATURE

14 NOV 92

DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1224395</u>		S	B	
C/G		RT/CO	HWDF	NONE

26.25

DISCREPANCY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY REFUSE DISPOSAL RECEIPT 9164147

224395	CASH	BP39169	11/14/92	07.23	5	JA
--------	------	---------	----------	-------	---	----

42.25	16.00	26.25	99 PER TON	\$577.24		
-------	-------	-------	------------	----------	--	--

TOTAL AMOUNT

\$577.24

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum 20% Recycled
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CO
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RE

NO. 15204

NON-HAZARDOUS WASTE DATA FORM

NAME Unocal SS#4357--11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst
 ADDRESS 911 Wilshire Blvd, Suite 1010
 CITY, STATE, ZIP Los Angeles, CA 90017 PHONE NO. (213) 977-6596

CONTAINERS: No. 1 VOLUME 164 WEIGHT
 TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER

WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS LIST Removal
 COMPONENTS OF WASTE PPM COMPONENTS OF WASTE PPM

1. Soil 99-100% 5.
 2. 6.
 3. 7.

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
 WASTE AS DESCRIBED IS 100%
 NON-HAZARDOUS.

Jim Adams
 TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92
 DATE

NAME Pacific Environmental Management Corporation
 ADDRESS 2045 E. Carson Street
 CITY, STATE, ZIP Carson, CA 90810
 PHONE NO. 310-513-2100
 TRUCK, UNIT, I.D. NO.
 SERVICE ORDER NO.
 PICK UP DATE
Harry James Wallace
 TYPED OR PRINTED FULL NAME & SIGNATURE
11-7-92 DATE

NAME Puente Hills Landfill
 ADDRESS 2800 Workman Mill Road
 CITY, STATE, ZIP Whittier, CA 90601
 PHONE NO. 310-699-3376
 DISPOSAL METHOD
☒ LANDFILL ☐ OTHER

Arthur B. Berry Jr. Allen B. Berry Jr. 14 NOV 92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1224287</u>		S	S	<u>22.69</u>
CIG		RTCD	HWDP	<u>NONE</u>

DISCREPANCY

COUNTY SAN

COUNTS OF LOS ANGELES COUNTY

REFUSE DISPOSAL RECEIPT 9164146

1224387

CASH

8F39712

PH

11/14/92

1025208

5

JA

38.69

16.00

22.69

3

\$21.99 PER TON

\$498.95

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15203

NON-HAZARDOUS WASTE DATA FORM

NAME Unocal SS#4357--11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst
 ADDRESS 911 Wilshire Blvd, Suite 1010
 CITY, STATE, ZIP Los Angeles, CA 90017
 PHONE NO. (213) 977-6596

CONTAINERS: No. 1 VOLUME 164 WEIGHT _____
 TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER _____

WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS UST Removal
 COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %

1. Soil 99-100% 5. _____

2. _____ 6. _____

3. PH 7-10 7. _____

4. _____ 8. _____
 PROPERTIES: ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
 WASTE AS DESCRIBED IS 100%
 NON-HAZARDOUS.

Jim Adams 10-30-92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

NAME Pacific Environmental Management Corporation
 ADDRESS 2045 E. Carson Street
 CITY, STATE, ZIP Carson, CA 90810
 PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. _____ SERVICE ORDER NO. _____

PICK UP DATE _____

Paul L. Zuercher Paul L. Zuercher 11-3-92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

NAME Puente Hills Landfill
 ADDRESS 2800 Workman Mill Road
 CITY, STATE, ZIP Whittier, CA 90601
 PHONE NO. 310-699-3376

DISPOSAL METHOD ☒ LANDFILL ☐ OTHER _____

Andrew B. Denny, Jr. 14 NOV 92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>1224371</u>		S	B	<u>26.62E</u>
CIG		RT/CD	HWDF	NONE

DISCREPANCY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9164142

1224371	CASH	BP39689	PH	11/14/92	07-18	JA
---------	------	---------	----	----------	-------	----

42.54	15.92E	26.62	3	\$21.99 PER TON	\$585.37E
-------	--------	-------	---	-----------------	-----------

TOTAL AMOUNT

ONE D 85.37

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NON-HAZARDOUS WASTE DATA FORM

NO. 11201

Unocal SS#:4357--11280 National Blvd, Culver City
NAME Unocal Hazardous Materials Analyst

ADDRESS 911 Wilshire Blvd, Suite 1010

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1

VOLUME 184

WEIGHT

TYPE:

☐

TANK TRUCK

☒

DUMP TRUCK

☐

DRUMS

☐

CARTONS

☐

OTHER

WASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE PPM %

GENERATING PROCESS UST Removal
COMPONENTS OF WASTE PPM %

1. Soil 99-100%

PROPERTIES:

pH 7-10

☒

SOLID

☐

LIQUID

☐

SLUDGE

☐

SLURRY

☐

OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

NAME Pacific Environmental Management Corporation

ADDRESS 2045 E. Carson Street

CITY, STATE, ZIP Carson, CA 90810

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. 1241/7630

Rick Scott

TYPED OR PRINTED FULL NAME & SIGNATURE

SERVICE ORDER NO.

PICK UP DATE

NAME Puente Hills Landfill

ADDRESS 2800 Workman Mill Road

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

Arthur B. Doner Jr. 11/13/92

TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

GEN	OLD/NEW	L	A	TONS
TRANS 1224350		S	B	26.53E
CO		RTCD	HWDP	NONE

DISCREPANCY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY REFUSE DISPOSAL RECEIPT 9164140

1224350	AP 39690	11/19/92	07.11	5	JA
---------	----------	----------	-------	---	----

43.03	26.53	3	458332E		
-------	-------	---	---------	--	--

TOTAL AMOUNT

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum

THIS AMOUNT IS NOT COMPUTED FOR
RECEIVED SCALE FOR WEIGHOUT

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED

LOAD #1

NON-HAZARDOUS WASTE DATA FORM

NO. 15213

NAME Unocal SS#4357--11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst

EPA
I.D.
NO.

ADDRESS 911 Wilshire Blvd, Suite 1010

PROFILE
NO.

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1

VOLUME 18 yds

WEIGHT

TYPE:

☐ TANK TRUCK

☒ DUMP TRUCK

☐ DRUMS

☐ CARTONS

☐ OTHER

WASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE

GENERATING PROCESS UST Removal
COMPONENTS OF WASTE

1. Soil 99-100%

5.

2.

6.

3.

7.

4.

8.

PROPERTIES:

pH 7-10

☒ SOLID

☐ LIQUID

☐ SLUDGE

☐ SLURRY

☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

NAME Pacific Environmental Management Corporation

EPA
I.D.
NO.

ADDRESS 2045 E. Carson Street

SERVICE ORDER NO.

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE 11/4/92

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. 1230/7619

Richard W Bryan

TYPED OR PRINTED FULL NAME & SIGNATURE

Richard W Bryan 11/4/92

DATE

NAME Puente Hills Landfill

EPA
I.D.
NO.

ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

☒ LANDFILL

☐ OTHER

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

Arthur B. Perry, Jr.

TYPED OR PRINTED FULL NAME & SIGNATURE

Arthur B. Perry, Jr. 14 Nov 92

DATE

GEN	OLD/NEW	L	A	TONS
TRANS <u>122A925</u>		S	B	<u>19.29</u>
C/O		RT/OD	HWDF	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

LANDFILL

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9164508 *LOAD #2*

1224925	CASH	BP39690	PH: <i>UNOAL</i>	11/14/92	10.07	5	EET
---------	------	---------	------------------	----------	-------	---	-----

35	79	19.29	\$38.98 PER TON	\$424.19			
----	----	-------	-----------------	----------	--	--	--

TOTAL AMOUNT

\$424.19

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED PLEASE
RETURN TO SCALE FOR WEIGHT

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NON-HAZARDOUS WASTE DATA FORM

NO. 15216

#7632

NAME Unocal SS#:4357--11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst

EPA
I.D.
NO.

ADDRESS 911 Wilshire Blvd, Suite 1010

PROFILE
NO.

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. /

VOLUME

WEIGHT

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER

WASTE DESCRIPTION Non-Hazardous Soil
COMPONENTS OF WASTE PPM %

GENERATING PROCESS UST Removal
COMPONENTS OF WASTE PPM %

1. Soil 99-100%

2.

3.

4.

PROPERTIES: pH 7-10, ☒ SOLID

☐ LIQUID

☐ SLUDGE

☐ SLURRY

☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.

Jim Adams

TYPED OR PRINTED FULL NAME & SIGNATURE

10-30-92

DATE

NAME Pacific Environmental Management Corporation

EPA
I.D.
NO.

ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. 5-209-28

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE 11-4-92

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. 1232-7822

TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

NAME Puente Hills Landfill

EPA
I.D.
NO.

ADDRESS 2800 Workman Mill Road

DISPOSAL METHOD

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

TYPED OR PRINTED FULL NAME & SIGNATURE

DATE

GEN	OLD/NEW	L	A	TONS
TRANS 1224907		S	B	
CO		RT/CO	HWOP	NONE

DISCREPANCY

TO BE COMPLETED BY GENERATOR

TRANSPORTER

130 FACILITY

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9164506

1224907	CASH	BP39712	PH	11/14/92	10.00	5	EET
38.51	16.00	22.51	3	\$21.99 PER TON	\$494.99		
						TOTAL AMOUNT	
						\$494.99	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

NO. 15208

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

TRANSPORTER

TSO FACILITY

NAME Unocal SS#4357--11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst

ADDRESS 911 Wilshire Blvd, Suite 1010

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1 VOLUME 164 WEIGHT _____

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER _____

WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS UST Removal

1. Soil 99-100% 5. _____

2. _____ 6. _____

3. _____ 7. _____

4. _____ 8. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.

Jim Adams 10-30-92
TYPED OR PRINTED FULL NAME & SIGNATURE DATE

NAME Pacific Environmental Management Corporation

ADDRESS 2045 E. Carson Street

CITY, STATE, ZIP Carson, CA 90810

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. 12357633 DONALD D JAVEL 11/3/92
TYPED OR PRINTED FULL NAME & SIGNATURE DATE

NAME Puente Hills Landfill PH # 16

ADDRESS 2800 Workman Mill Road

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3876

16208 11/4/92
TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS	DISCREPANCY
TRANS		S	S	21.25	
CO		RT/CD	HWDP	NONE	

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9220993

1208790	CASH	BP91653	PH	11/04/92	09.09	4	BL
37.36	16.10	21.26	3	\$21.99 PER TON	\$467.51		
						TOTAL AMOUNT	
						\$467.51	
LOAD CODES: 1 - Refuse 2 - Solid Fill 3 - Hard To Handle 4 - Minimum 5 - Non-Hazardous Liquid				IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE RETURN TO SCALE FOR WEIGHOUT. THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED. PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT			

NO. 15209

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

NAME Unocal SS#4357--11280 National Blvd, Culver City
Unocal Hazardous Materials Analyst

ADDRESS 911 Wilshire Blvd, Suite 1010

CITY, STATE, ZIP Los Angeles, CA 90017

PHONE NO. (213) 977-6596

CONTAINERS: No. 1 VOLUME 164 WEIGHT 258

TYPE: ☐ TANK TRUCK ☒ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER

WASTE DESCRIPTION Non-Hazardous Soil GENERATING PROCESS UST Removal

COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %

1. Soil 99-100%

2. _____

3. _____

4. _____

PROPERTIES: pH 7-10 ☒ SOLID ☐ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

Jim Adams 10-30-92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TRANSPORTER

NAME Pacific Environmental Management Corporation

ADDRESS 2045 E. Carson Street

CITY, STATE, ZIP Carson, CA 90810

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. 3225-7617

SERVICE ORDER NO. _____

PICK UP DATE 11-3-92

Kathy Gebel 11-3-92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

NAME Puente Hills Landfill PH # 6

ADDRESS 2800 Workman Mill Road

CITY, STATE, ZIP Whittier, CA 90601

PHONE NO. 310-699-3376

DISPOSAL METHOD ☒ LANDFILL ☐ OTHER

Siew Siew 11/4/92
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	22.07
C/O		RT/CO	HWDP	NONE

DISCREPANCY

NO. 15211

NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

TRANSPORTER

DISPOSAL FACILITY

NAME <u>Unocal SS#:4357--11280 National Blvd, Culver City</u> <u>Unocal Hazardous Materials Analyst</u>		EPA I.D. NO.	
ADDRESS <u>911 Wilshire Blvd, Suite 1010</u>		PROFILE NO.	<u>SAFETY DATA SHEET 12102892-1</u>
CITY, STATE, ZIP <u>Los Angeles, CA 90017</u>		PHONE NO. <u>(213) 977-6596</u>	
CONTAINERS: No. <u>1</u> VOLUME <u>164</u> WEIGHT _____			
TYPE: <input type="checkbox"/> TANK TRUCK <input checked="" type="checkbox"/> DUMP TRUCK <input type="checkbox"/> DRUMS <input type="checkbox"/> CARTONS <input type="checkbox"/> OTHER _____			
WASTE DESCRIPTION <u>Non-Hazardous Soil</u>		GENERATING PROCESS <u>UST Removal</u>	
COMPONENTS OF WASTE		COMPONENTS OF WASTE	
1. <u>Soil</u>	<u>99-100%</u>	5. _____	_____
2. _____	_____	6. _____	_____
3. _____	_____	7. _____	_____
4. _____	_____	8. _____	_____
PROPERTIES: pH <u>7-10</u> <input checked="" type="checkbox"/> SOLID <input type="checkbox"/> LIQUID <input type="checkbox"/> SLUDGE <input type="checkbox"/> SLURRY <input type="checkbox"/> OTHER _____			
HANDLING INSTRUCTIONS: <u>Wear appropriate safety gear when handling.</u>			
<div style="border: 1px solid black; padding: 2px; width: fit-content;"> THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS. </div>		<u>Jim Adams</u> TYPED OR PRINTED FULL NAME & SIGNATURE	
		<u>10-30-92</u> DATE	
NAME <u>Pacific Environmental Management Corporation</u>		EPA I.D. NO.	
ADDRESS <u>2045 E. Carson Street</u>		SERVICE ORDER NO. _____	
CITY, STATE, ZIP <u>Carson, CA 90810</u>		PICK UP DATE _____	
PHONE NO. <u>310-513-2100</u>			
TRUCK, UNIT, I.D. NO. <u>1237/8618</u>		<u>ED DERINGER SD Deringer</u> TYPED OR PRINTED FULL NAME & SIGNATURE	
		<u>11/3/92</u> DATE	
NAME <u>Puente Hills Landfill</u>		EPA I.D. NO.	
ADDRESS <u>2800 Workman Mill Road</u>		DISPOSAL METHOD	
CITY, STATE, ZIP <u>Whittier, CA 90601</u>		<input checked="" type="checkbox"/> LANDFILL <input type="checkbox"/> OTHER _____	
PHONE NO. <u>310-699-3376</u>			
<u>Bruce Haregum</u> TYPED OR PRINTED FULL NAME & SIGNATURE		<u>11/4/92</u> DATE	
GEN <u>U</u> <u>CA</u> <u>51</u>	OL <u>NEW</u>	IL <u>A</u>	TONS <u>7610</u>
TRANS <u>120827</u>		S <u>B</u>	<u>20.57</u>
CR		RT <u>CD</u>	HWDP <u>NONE</u>
DISCREPANCY _____			

ED Deringer

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9220930

1208370	CASH	BF39710	PH	11/04/92	07.47	4	BL
---------	------	---------	----	----------	-------	---	----

37499	1522	22402	3	\$21.99 PER TON	\$485.32		
-------	------	-------	---	-----------------	----------	--	--

TOTAL AMOUNT					
--------------	--	--	--	--	--

\$485.32					
----------	--	--	--	--	--

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Hard To Handle
- 4 - Minimum
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

Small
28

COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY - REFUSE DISPOSAL RECEIPT 9220535

1208276	CASH	BP91653	PH	11/04/92	07.27	6	JA
3743	16.50	20.93	3	\$21.99 PER TON	\$460.25		
TOTAL AMOUNT							
						--\$460.25	

LOAD CODES:

- 1 - Refuse
- 2 - Solid Fill
- 3 - Heavy Metal
- 4 - Medium Metal
- 5 - Non-Hazardous Liquid

IF TOTAL AMOUNT IS NOT COMPUTED, PLEASE
RETURN TO SCALE FOR WEIGHOUT.

THIS RECEIPT IS VOID IF ANY HAND WRITTEN ENTRIES ARE CONTAINED.
PLEASE READ AND OBSERVE RULES ON REVERSE SIDE OF THIS RECEIPT

**UNOCAL Refining and
Marketing Division**

**Phase II
Subsurface Investigation
Report for Station #4357**

April 1993



MONTGOMERY WATSON

PHASE II SUBSURFACE INVESTIGATION REPORT

**UNOCAL SERVICE STATION #4357
11280 NATIONAL BOULEVARD, LOS ANGELES, CALIFORNIA**

Prepared for

**UNOCAL CORPORATION
17700 Castleton Street, Suite 500
City of Industry, California 91748**

Prepared by

**MONTGOMERY WATSON
301 North Lake Avenue
Pasadena, California 91101**

April 1993

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
1.0 Introduction	1
2.0 Site Description	1
3.0 Regional Geology and Hydrogeology	1
4.0 Field Methods	2
5.0 Well Construction	3
6.0 Laboratory Analysis	4
7.0 Surface Completion and Soil Disposal	4
8.0 LUFT Manual Evaluation	5
9.0 Conclusion and Recommendations	5
10.0 Limitations	5

FIGURES

1	Site Vicinity Map
2	Site Map
3	Cross-Section A-A'
4	Site Map with Soil Boring Locations
5	Lines of Equal Thickness of the Gasper, Ballona, Artesia and Exposition Aquifers
6	Well Construction Diagram for VE-1
7	Tank Removal Soil Sample Locations
8	Soil Iso-concentration for TFH and BTEX Results Greater than Non-detect
9	Soil Iso-concentration for TFH and BTEX Results Greater than Recommended Clean-up Levels

TABLE OF CONTENTS
(Continued)

TABLES

- 1 Summary of TFH and BTEX Analytical Results-Phase II
- 2 Summary of TFH and BTEX Analytical Results-Tank Removal Operation
- 3 Summary of Geotechnical and Chemical Analysis Results
- 4 Waste Self Certification Summary
- 5 Oral & Dermal LD-50 Calculations for Soil Samples
- 6 LUFT Risk Appraisal
- 7 Gasoline Leaching Potential

APPENDICES

- A Los Angeles City Fire/Life Safety Violation Notice Number 53745
- B Soil Boring Geologic Logs
- C Laboratory Report & Chain-of-Custody Forms
- D Non-hazardous Waste Data Forms

1.0 INTRODUCTION

At the direction of UNOCAL Corporation, MONTGOMERY WATSON (MONTGOMERY) conducted a Phase II environmental site investigation at UNOCAL Service Station #4357 located at 11280 National Boulevard, Los Angeles, California (see Figure 1). The purpose of this investigation was to explore the potential vertical and lateral extent of detectable fuel hydrocarbons in the soil in the vicinity of the tank clusters and pump islands. Data obtained during this Phase II characterization effort is required to adequately assess effective remedial alternatives available if remediation is deemed necessary. The objective of this report is to describe the drilling activities and the analytical results. This report has been prepared in accordance with standard industry practices for site assessments of this type.

2.0 SITE DESCRIPTION

The subject site is located in a commercial/residential area within the City of Los Angeles, bordered by National Boulevard to the North, and Sawtelle Boulevard to the West. The property consists of a garage building and associated pump islands built in 1971 (see Figure 2). Two 10,000 gallon single-wall steel subsurface gasoline tanks and one 550 gallon waste oil tank were installed in 1971, while the 10,000 gallon single-wall fiberglass diesel tank was installed in 1982. The underground storage tanks (UST) were utilized for the storage of gasoline and diesel fuels and waste oil. Soil excavation and tank removal and replacement operations were conducted on September 22, 1992. The gasoline and waste oil tank pits were backfilled and compacted with clean imported pea gravel once the new tanks were installed.

The activities described in this report were a result of findings from the UST removal and the subsequent Los Angeles City Fire/Life Safety Violation Notice Number 53745 (see Appendix A). The UST removal effort described in MONTGOMERY's Closure Report dated December 1992 identified gasoline contamination near the Eastern corner of the tank pit and underneath the pump islands and product piping to the South of the tank pit.

3.0 GEOLOGY AND HYDROGEOLOGY

The site is located within the Santa Monica Groundwater Basin. The region is interpreted to be underlain by Recent Alluvium underlain by the Lakewood and San Pedro Formations. The surface of the site is covered primarily by asphalt or concrete with underlying aggregate base. Figure 3 graphically depicts the subsurface soils at the site between 0 and 95 feet below-ground-surface (bgs). The location of geologic cross-section A-A' is shown on Figure 4. Immediately below the aggregate base lies approximately 12 to 20 feet of dark brown lean clay with some silt.

The lean clay is underlain by a clayey silt which is laterally discontinuous and a silty sand whose thicknesses vary from 5 to 10 feet across the site. A second lean clay layer, approximately 3 to 10 feet in thickness, was encountered at 20 to 30 feet bgs. A clayey sand with occasional subangular gravel lies below the second clay layer. This clayey sand varies in thickness from 3 to 30 feet. A third thin clay layer approximately 2 feet thick, was encountered 43 and 52 feet bgs in SB-1 and B-1, respectively. This clay is underlain by a fine to medium subrounded sand.

Regional groundwater studies indicate that the Bellflower aquiclude consists of 20 to 40 feet of clay and sandy clay extending to a maximum depth of about 50 feet bgs in the site vicinity. The underlying Ballona Aquifer is reported to consist of 30 to 50 feet of gravel and coarse sand with a maximum depth of 70 feet bgs (see Figure 5, California Department of Water Resources (CDWR)-Bulletin No. 104, 1961). It is reportedly underlain by the Silverado Aquifer consisting of approximately 100 to 280 feet of sand and gravel, with small amounts of clay. The most recent measurement taken on June 1, 1992, for the Los Angeles County Monitoring Well #2546K (Elev. 151.0 feet MSL) located at Olympic and Centinela (approximately 1 mile northwest of the project site) indicate groundwater at 95.8 feet bgs (L.A. County Hydrologic Records). However, no groundwater was encountered to a depth of 95 feet bgs (Elev. 125 feet MSL) at the site during this investigation. The soils encountered in B-1 at a depth of 80 to 95 feet bgs were mostly fine to medium sand rather than the coarse sand, rounded to subrounded gravel, and cobbles up to five inches in diameter which reportedly comprise the Ballona Aquifer. In addition, as shown in Figure 3, there appears to be a gap in the Ballona Aquifer in the vicinity of the site. Based on the lack of groundwater to a depth of 95 feet bgs, site lithology inconsistent with that described for the Ballona Aquifer, and regional data which suggests a gap in the Ballona Aquifer in the site vicinity, it is MONTGOMERY's opinion that Ballona Aquifer is not present underneath the project site.

4.0 FIELD METHODS

Three hand-auger soil borings (HB-2 through HB-4), three slant soil borings (SB-1 through SB-3), and four vertical soil borings (B-1 through B-4) were advanced at the site in the locations shown on Figure 4. Hand-auger borings were advanced to a total depth of 10 feet bgs and slant and vertical borings were drilled to total depths varying from 28 to 95 feet bgs. Boring B-2 was abandoned at 28 feet bgs due to rig breakdown. Slant boring SB-3 was drilled in a southeasterly direction underneath the pump island in the vicinity of boring B-2. The purpose was to obtain additional information where B-2 was unsuccessful.

Hand-auger borings were drilled at an angle of 10 degrees from vertical adjacent to pump islands and product piping. Slant borings SB-1 and SB-2 were drilled at angles of 25 and 20 degrees, respectively, from vertical in a southerly direction underneath the existing gasoline USTs. SB-3 was also drilled at an angle of 25 degrees from vertical but in southeasterly direction underneath one of the pump islands. B-1 through B-4 were augered adjacent to pump islands and product lines. Boring B-1 was drilled through an existing conductor casing, then converted into a vapor extraction well.

The borings were drilled using a Mobile Acker, a Soil Master-50, or a CME-75 hollow-stem auger drill rig equipped with 8-inch and 10-inch diameter augers. Soil samples were collected for the vertical and slant borings at the 10', 15', 20', 30', and 40' intervals using a 2.5-inch inside diameter split spoon sampler with three 6-inch brass sleeves, with the exception of boring B-1 which was sampled down to 90 feet bgs. MONTGOMERY's geologist screened soil samples and cuttings generated from drilling activities to determine the relative concentration of volatile organic compounds using a hand-held PID. The instrument was calibrated with isobutylene, a benzene equivalent, prior to use each day. Each soil sample was deposited and sealed into a four ounce glass jar, and allowed to volatilize for approximately 5 minutes. The geologist screened the sample by placing the probe into the glass jar's headspace. The measured headspace values were recorded on the geologic log. Soil from one of the sleeves was then extruded, examined by the hydrogeologist, and described on the geologic logs, which are presented in Appendix B.

In the hand-auger borings, soil samples were collected by advancing to the depth of approximately 10 feet, cleaning the borehole of the cuttings, and driving a 2-inch diameter brass sleeve through the sampling interval using a hand driven slide-hammer. The soil from the bottom end of the sleeve was extruded into a glass jar, covered with foil, allowed to volatilize for approximately 5 minutes, and was then screened with the HNU. The cuttings from the bottom of the borings were examined and described in the geologic boring logs.

The samplers and sleeves were decontaminated prior to use by scrubbing in an Alconox detergent solution followed by thorough rinse with tap and distilled water.

The brass sleeves containing samples to be analyzed were sealed with Teflon tape and plastic end caps. Samples were immediately analyzed for Total Fuel Hydrocarbons (TFH) using EPA Method 8015(M)-Gasoline and for purgeable aromatics, benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8020 by on-site GTEL Mobile Laboratories, a California State Toxics Department certified laboratory for hazardous waste analysis. Selected samples for total lead (EPA Method 7420) and TFH- EPA 8015(M)-Diesel were transported to the GTEL stationary laboratory in Torrance, California. An additional soil sample from boring B-1 was collected at a depth of 40 feet bgs and submitted to the Smith-Emery Company in Los Angeles, California, to be analyzed for pH, porosity, bulk density, hydraulic conductivity, water saturation, contaminant saturation, air permeability, particle size, nitrogen, phosphate, bacterial plate count, and total organic carbons. The 40-foot sample was collected to obtain additional data for evaluation of remedial alternatives in the future.

5.0 WELL CONSTRUCTION

One vapor extraction well (VE-1) was installed at boring B-1 due to presence of elevated TFH concentrations in the soil. The well was constructed of 4-inch diameter PVC blank casing and 0.020-inch factory slotted PVC screen through the existing Conductor Casing CC-1 as shown in

the well construction diagram (see Figure 6). A filter pack consisting of Monterey #3 sand was tremied into place using the hollow center of the auger drill string. The top surface of the filter pack was sounded repeatedly to ensure no bridging. A seal consisting of 3 feet of bentonite chips was installed and hydrated with approximately 5 gallons of water. The remaining annular space was grouted to the ground surface with bentonite cement mixture. The well was secured with a water-tight PVC cap, and the existing 24" by 24" traffic rated steel cover.

6.0 LABORATORY ANALYSIS

All samples were analyzed for Total Fuel Hydrocarbons (TFH) by EPA Method 8015(M), and Aromatic Volatile Organics (BTEX) by EPA Method 8020. Laboratory results for TFH and BTEX for the Phase II and the tank removal operation are tabulated in Tables 1 and 2, respectively. Results of other parameters tested in the B-1 40-foot sample are summarized in Table 3. Complete laboratory report and Chain-of-Custody (COC) forms for Phase II are provided in Appendix C.

Chemical contamination consistent with gasoline fuel is apparent in the southeast corner of the tank pit to depths of 45 feet bgs. The highest TFH result was obtained during the tank removal operation at Sample location C-1 at 12 feet bgs (see Figure 7). Soil samples collected at B-1 from 50 feet to 90 feet bgs indicated BTEX results slightly above the detection limits. The bottom sample at B-1 at 90 feet bgs showed 0.019 mg/kg of xylenes and non-detect for the remaining parameters tested.

Limited soil TFH contamination was encountered from surface to a depth of 25 feet underneath the pump islands adjacent to Sawtelle Boulevard. Soil samples collected underneath the existing tanks (borings SB-1 and SB-2) did not suggest contaminants levels above the detection levels. A soil iso-concentration map for TFH and BTEX results greater than non-detect is depicted in Figure 8.

7.0 SURFACE COMPLETION AND SOIL DISPOSAL

All borings were backfilled with volclay grout to the surface after total depth was reached. The surface of these borings was finished to match the surrounding concrete or paved areas.

Prior to waste disposal, the soil data obtained during the tank removal operation and this Phase II study were examined to characterize the waste. Presently UST cleanup sites are exempt from TCLP regulation (RCRA). Tables 4 and 5 outline the major steps that must be done to perform a waste classification for a stream. Based upon the calculations provided in the tables, the generated waste was classified as non-hazardous waste. The drilling contractor placed all soil cuttings from the borings and all decontamination fluids in 55-gallon drums of the type recommended by DOT and stored these materials on-site. The drums were secured and labeled with appropriate non-hazardous waste labels. Pacific Environmental Management Inc. a

registered hazardous waste hauler transported the soil drums to the TPS Soil Recycling Center in Adelanto, California. The water drums were transported to the Crosby & Overton treatment facility in Long Beach. Copies of non-hazardous waste data forms are provided in Appendix D.

8.0 LUFT MANUAL EVALUATION

An evaluation of site conditions and other characteristics was performed using guidance from the Leaking Underground Fuel Tank (LUFT) Field Manual, (California State Water Resources Control Board, SWRCB, revised October 1989) to assess whether or not remedial activities will be required at this site.

Table 4 is a screening list from the LUFT Manual and is intended to determine the applicability of LUFT Manual guidelines to this site. Based on a "no" response to most items, the LUFT guidelines should be applicable to this site. Table 5 from the LUFT Manual is used to determine acceptable levels of soil contamination resulting from gasoline without posing a threat to groundwater quality at the site. Based on the LUFT guidelines and the characteristics at this site, maximum TFH concentrations should not exceed 100 ppm, and B/T/X/E concentrations should not exceed 0.3/0.3/1/1 ppm, respectively.

9.0 CONCLUSIONS AND RECOMMENDATIONS

Based on analytical results obtained during the tank removal operation and the Phase II site assessment, limited soil remediation would appear to be warranted in the immediate vicinity of pump islands and southeast corner of tanks. A soil iso-concentration map for TFH and BTEX concentrations exceeding the recommended clean-up levels described previously is depicted in Figure 9.

10.0 LIMITATIONS

This report documents a Phase II Site Investigation and was prepared under the direction and control of our client, UNOCAL Marketing and Refining Division. As with all work of this nature, there are inherent uncertainties. The client has determined that the level of effort and the corresponding degree of uncertainty is acceptable for the client's purpose. Any third party necessarily has a different interest, purposes, and motives than the client with regard to this initial site investigation. Thus, use of this report by any third party is expressly prohibited without the following: 1) written authorization from the client; and 2) the third party's written agreement to accept the limitations on liability and indemnification which were part of the agreement to perform the study and prepare the report.

TABLE 1
LABORATORY ANALYSES OF CONFIRMATION SOIL BORING SAMPLES
UNOCAL STATION NO. 4357
(MARCH 1993)

BORING/ DEPTH (ft)	PID (units)	TFH-G (mg/kg)	TFH-D (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Total Xylene (mg/kg)	Ethylbenzene (mg/kg)
SB-1 15	4	ND		ND	ND	ND	ND
20	2.6	ND		ND	ND	ND	ND
30	2.8	ND		ND	ND	ND	ND
40	1.1	ND		ND	ND	ND	ND
45	2.4	ND		ND	ND	ND	ND
SB-2 15	3.8	ND		ND	ND	ND	ND
20	3.8	ND		ND	ND	ND	ND
30	3.8	ND		ND	ND	ND	ND
40	3.8	ND		ND	ND	ND	ND
SB-3 15	2.6	ND		ND	ND	ND	ND
30	3	ND		ND	ND	ND	ND
40	2	ND		ND	ND	ND	ND
50	2	ND		ND	ND	ND	ND
B-1 15	35	ND		ND	0.011	0.17	0.03
20	185	3100	ND<10	ND<0.5	34	520	100
30	172	97		ND<0.025	0.99	16	2.5
40	152	980		0.9	70	160	31
45	40	10		0.007	0.54	1.1	0.16
50	22	ND		ND	0.061	0.091	0.009
55	15.2	1.8		ND	0.056	0.069	0.013
60	24	ND		ND	0.031	0.063	0.009
65	32	ND		ND	ND	ND	ND
70	5	ND		ND	0.006	0.035	ND
75	18	ND		ND	0.005	0.03	0.005
90	18	ND		ND	ND	0.019	ND
B-2 15	172	8		0.047	0.019	0.052	0.016
20	152	ND	ND<10	0.19	0.006	0.087	ND
B-3 10	1	ND		ND	ND	ND	ND
20	1	ND		ND	ND	ND	ND
30	0	ND		ND	ND	ND	ND
40	1	ND		ND	ND	ND	ND
B-4 20	0	ND		ND	ND	ND	ND
HB-2 10	1.5	2.3		ND	ND	0.043	0.012
HB-3 10	0	ND		ND	ND	ND	ND
HB-4 10	0	ND		ND	ND	ND	ND

NOTE:

ND indicates constituents not detected above analytical limit:

TFH-G - Gasoline - ND < 1.0 mg/kg

TFH-D - Diesel - ND < 10 mg/kg

Benzene - ND < 0.005 mg/kg

Toluene - ND < 0.005 mg/kg

Ethylbenzene - ND < 0.005 mg/kg

Xylenes - ND < 0.015 mg/kg

Shaded area means results above the detection limits.

Blank space means not analyzed.

TABLE 2
UNOCAL SERVICE STATION #4357
SUMMARY OF SUBSURFACE TANK REMOVAL SOIL SAMPLE ANALYTICAL RESULTS (mg/kg)
(SEPTEMBER 1992)

LOG #	Depth (ft)	TPH-G	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES	COMMENTS
A-1	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
A-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
A-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
B-1	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
B-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
B-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
C-1	12	3300	ND<0.5	24	79	580	Bottom sample- gasoline tank
C-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
C-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
P-1	2	ND<10	ND<0.005	ND<0.005	ND<0.005	0.042	Pump island sample
P-2	2	170	0.55	1.3	1.7	1.3	Pump island sample
P-3	2	ND<10	0.014	0.025	0.047	0.33	Product piping sample
P-4	2	280	1.0	4.7	4.8	32	Pump island sample
P-5	2	ND<20	ND<0.010	ND<0.010	ND<0.010	0.066	Product piping sample
P-6	2	380	0.8	10	5.5	50	Pump island sample
P-7	2	18	0.41	0.22	0.49	2.1	Product piping sample
P-8	2	ND<10	ND<0.005	ND<0.005	0.007	0.057	Product piping sample
P-9	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-10	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-11	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-12	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-13	2	17	0.005	0.005	0.031	0.13	Product piping sample
P-14	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-15	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-16	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-17	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample

TABLE 3
UNOCAL SERVICE STATION #4357
GEOTECHNICAL AND CHEMICAL ANALYSIS RESULTS FOR SOIL SAMPLE B-1-40'
(MARCH 1993)

PARAMETER	METHOD	RESULT
Porosity	API RP-40	34.3 %
Bulk Density	API RP-40	1.73 g/cc
Hydraulic Conductivity	EPA 9100	7.36 x 10 ⁻⁶
Water Saturation	Dean-Stark	91.6 %
Contaminant Saturation	Dean-Stark	<0.1 %
Air Permeability, Native	API RP-40	13.5 md
Particl Size		see Appendix D
pH	EPA 9045	7.9 units
Nitrogen, as Ammonia	EPA 350.3	ND<10 mg/kg
Phosphate	EPA 300.0	ND<5 mg/kg
Heterotrophic Plate Count	M223	3.0 x 10 ³ CFU/g
Total Organic Carbons	EPA 415.1	770 mg O2/kg)

K = Permeability
md = Millidarcys
gm = Grams
cc = Cubic Centimeters
CFU/g = Colony Forming Units/grams

TABLE 4
UNOCAL SERVICE STATION #4357
WASTE SELF CERTIFICATION SUMMARY
Waste: Gasoline Contaminated soil
NO. OF SAMPLES: 4 + UNOCAL DATA BASE

	Regulatory Reference	Applicable Tests or List	Sample(s) Result	Hazardous Level	COMMENTS
Federal Haz. Waste ID Criteria					
A- Listed Waste:	40CFR 261-Subpart D				Gasoline containing soil is not a listed waste
B- Ignitability	40CFR 126.21	None for solid waste	NA		Considered non-hazardous
C- Corrosivity	40CFR 261.22	EPA Method 5.2	NA		Gasoline is not corrosive
D- Reactivity	40CFR 261.23		NA		Gasoline is not reactive
E- Toxicity Characteristics	40CFR 261.24		NA		UST cleanup site exempt
CONCLUSION: Waste is not a federal hazardous waste.					
State Haz. Waste ID Criteria					
A- Listed Waste:	CCR Article 9				Gasoline containing soil is not a listed waste
B- Ignitability	Tit. 22-66702	None for solid waste			Considered non-hazardous
C- Corrosivity	Tit. 22-66708	NA	NA		Gasoline is not corrosive
D- Reactivity	Tit. 22-66705	NA			Gasoline is not reactive
E- Toxicity:	Tit. 22-66696				
a) Aquatic		Fish bioassay	>750 mg/l	<750 mg/l	Considered non-hazardous
b) Chronic		Total Lead (TTLC)	11 mg/kg	1000 mg/l	
		Organic Lead (STLC)	NA	5 mg/l	Considered non-hazardous
c) Acute					
1-Oral LD-50		See Table 5	>>5000	<5000 mg/kg	Considered non-hazardous
2-Dermal LD-50		See Table 5	>>4300	<4300 mg/kg	Considered non-hazardous
3-Inhalation LD-50		NA			
CONCLUSION: Waste is not a state hazardous waste.					

TABLE 5
UNOCAL SERVICE STATION #4357
Oral & Dermal LD-50 Calculations for Soil Samples
NUMBER OF SOIL SAMPLES: 4 + UNOCAL DATA BASE

		DATA (mg/kg)				
		C-1	B-1-20	P-6	B-1-40	Tx
1- Calculate Oral LD-50:						
	Benzene	0.5	0.5	0.8	0.9	3306
	Ethylbenzene	24	34	10	70	3500
	Toluene	79	100	5.5	31	5000
	Xylenes	580	520	50	160	5000
Oral LD-50 = $100/(\text{Sum}(\%A_x/T_x))$ =		7204176	7470183	70426864	17102135	
2- Calculate Dermal LD-50:						
						Tx
	Benzene	0.5	0.5	0.8	0.9	48
Benzene Dermal LD-50 = $100/(\%A_x/T_x)$ =		96000000	96000000	60000000	53333333	

TABLE 6

LUFT RISK APPRAISAL
Unocal Service Station #4357
Los Angeles, California

General Risk Appraisal for Protection of Water Quality:		
Applicability Checklist	Yes	No
1. Is the site in a mountainous area? (shaded moist areas and/or areas with rock subsurface conditions)		X
2. Is the site in an area that could collect surface runoff or intercept water from a source other than the natural precipitation?		X
3. Does the areal extent of soil contamination exceed 100 meters?		X (1)
4. Do the concentration of fuel constituents in any soil samples exceed the following amounts: Benzene - 100 ppm, Toluene - 80 ppm Xylene - 40 ppm, Ethylbenzene - 40 ppm	X (2)	
5. Are there any records or evidence of man-made or natural objects which could provide a conduit for vertical migration of leachate?		X
6. Do any boring or excavation logs show the presence of fractures, joints or faults that could act as a conduit for vertical migration of leachate?		X
7. Do any boring logs show that contaminated soil could be within 5 ft. of highest groundwater?		X
8. Do any boring logs show the presence of a layer of material, 5 ft. thick or more, which is more than 75% sand and/or gravel?	X	

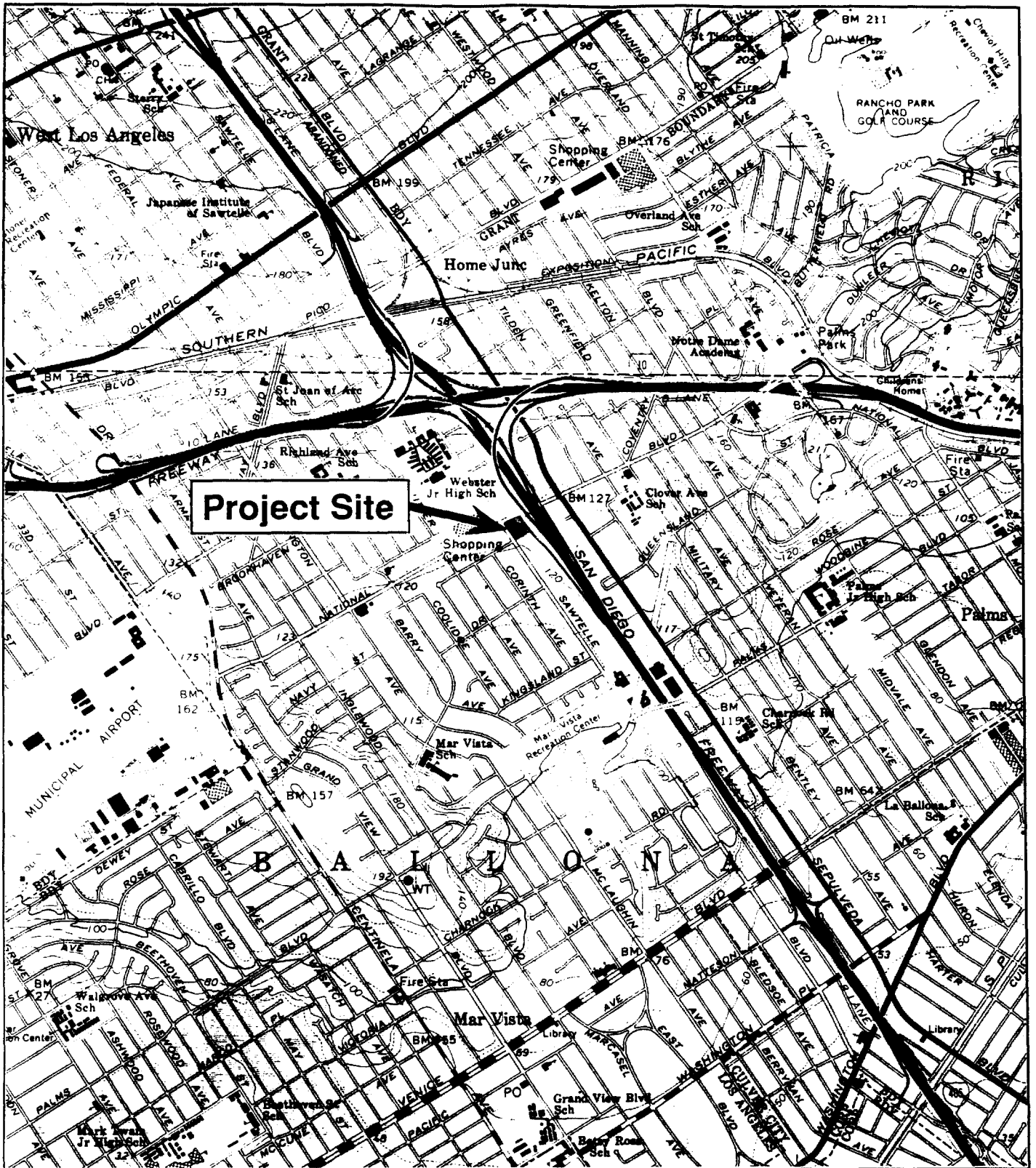
(1) Area extent currently estimated as less than 20 meter radius

(2) Only xylene and ethylbenzene exceed the amounts listed.

TABLE 7
GASOLINE LEACHING POTENTIAL FOR
Unocal Service Station #4357
Los Angeles, California

Leaching Potential Analysis for Gasoline Using Total Petroleum Hydrocarbons (TPH) and Benzene, Toluene, Xylene and Ethylbenzene (BTX&E)						
Site Feature	S c o r e	Score 10 Pts if Condi- tion is Met	S c o r e	Score 9 Pts if Condi- tion is Met	S c o r e	Score 5 Pts if Condi- tion is Met
Minimum depth to groundwater from the Soil Sample (ft)		>100		51-100	5	25-50 (1)
Fractures in Subsur- face (Applies to Foothills or Mountain Areas)	10	None		Unknown		Present
Average Annual Precipitation (inches)		<10	9	10-25		26-40 (2)
Man-Made Conduits Which Increase Vertical Migration of Leachate	10	None		Unknown		Present
Unique Site Features: Recharge Area, Coarse Soil, Nearby Wells, etc.		None	9	At Least One		More Than One
Column Totals - Total Pts	20	+	18	+	5	= 43
Range of Total Pts	49 Pts or More		41-48 Pts		40 Pts or Less	
Maximum Allowable B/T/X/E Levels (ppm)	1/50/50/50		.3/.3/1/1		NA (3)	
Maximum Allowable TPH Levels (ppm)	1,000		100		10	

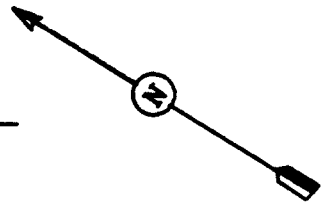
- (1) If depth is greater than 5 ft. but less than 25 ft., score 0 points
If depth is 5 ft. or less, this table should not be used.
- (2) If precipitation is over 40 inches, score 0 points.
- (3) Levels for BTX&E are not applicable at a TPH concentration of 10 ppm.



Source: 7.5 Minute Topographic Quadrangle Map
Beverly Hills, California, Dated 1966

0 1000 2000 4000
Scale in Feet

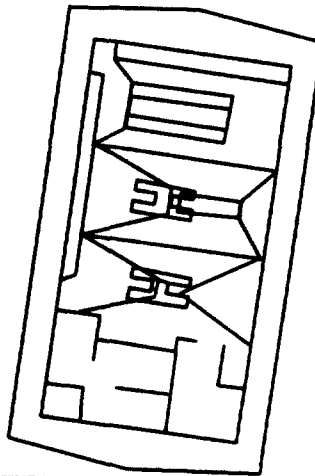
Site Location Map
Figure 1



PL 145'

PL 60'

FORMER 600 GAL.
WASTE OIL TANK



FORMER 10,000 GAL.
HORIZONTAL TANK

FORMER 10,000 GAL.
VERTICAL TANK

NATIONAL BOULEVARD

SAWTELLE BOULEVARD

0

SCALE

27'



ENVIRONMENTAL PROTECTION AGENCY

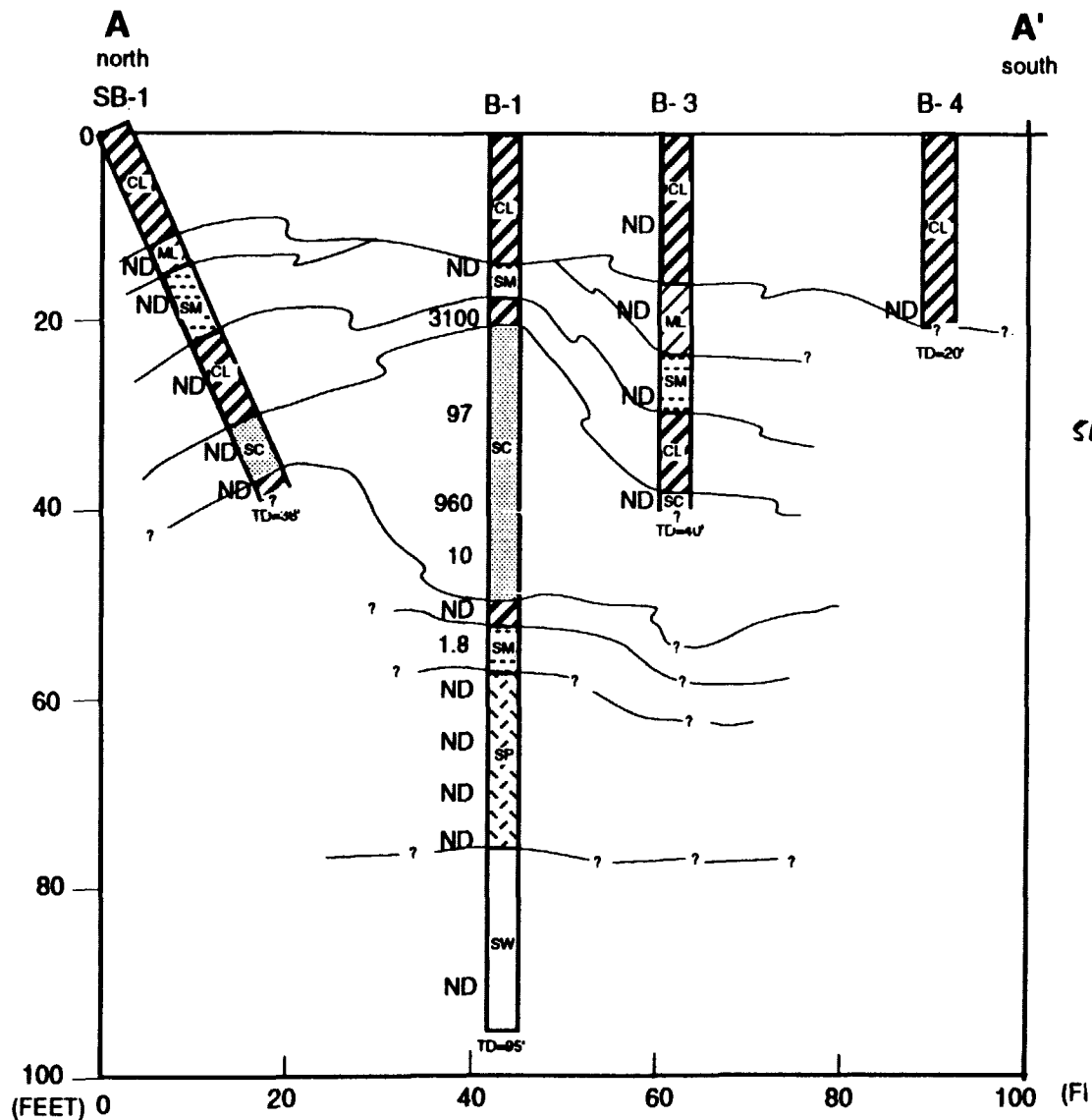
Research, Criteria

UNOCAL MARKETING & REFINING

UNOCAL SERVICE STATION NO. 4367

Site Map

FIGURE 2



Cross-Section A-A'
Unocal Station 4357

1171

840ppb
1992 Tank Replacement
evidence of gasoline in the soil

1993 Phase soil investigation

← results
1995 Dispenser upgrade/monitors
5/1/97 closure received

#16 11280 National Blvd.
sawtell

SE corner

Tosco purchase
4/1/97

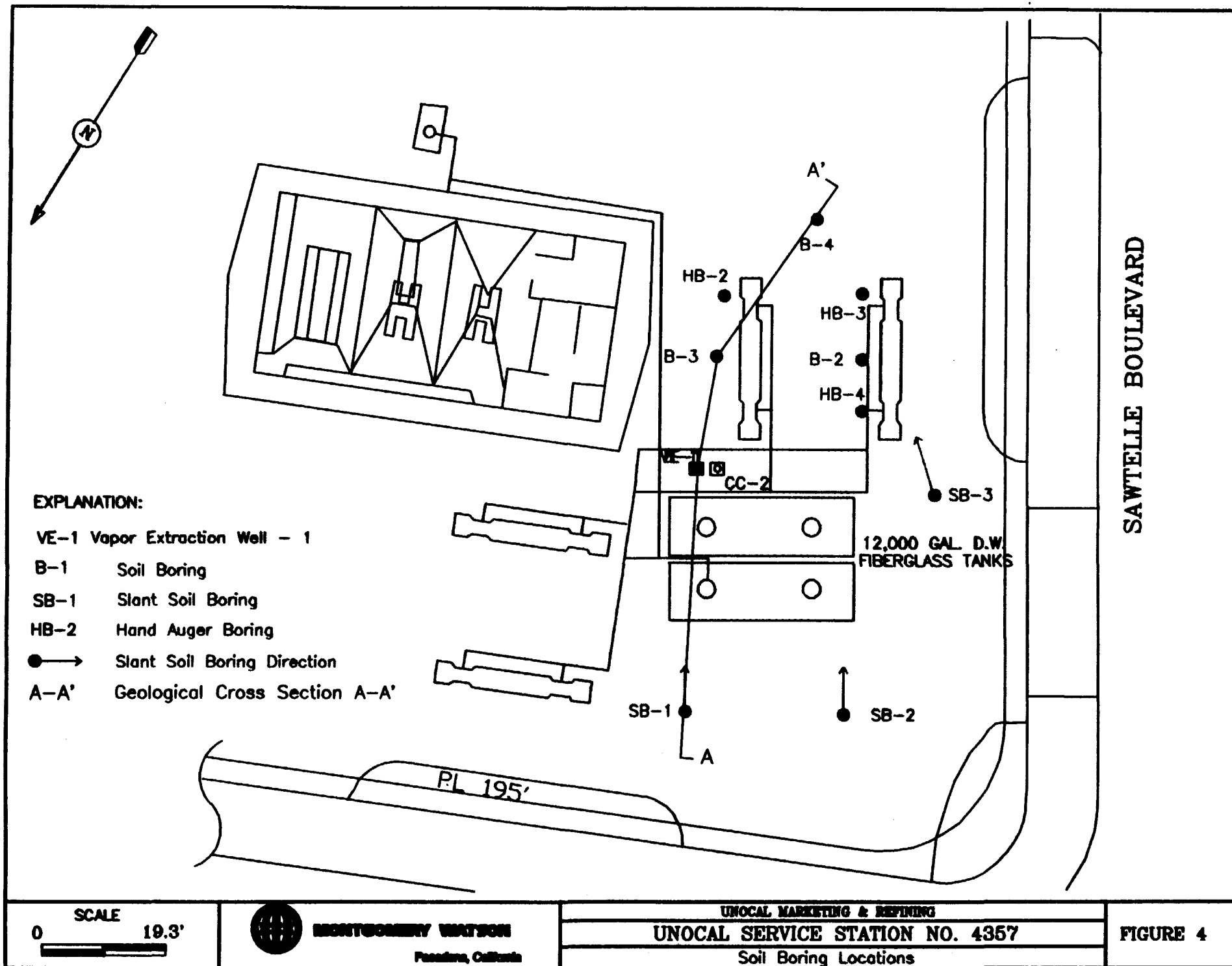
20 3.5
30 .083
40 ND

3 SB
4 VB
10 HB

Figure 3



Figure 3



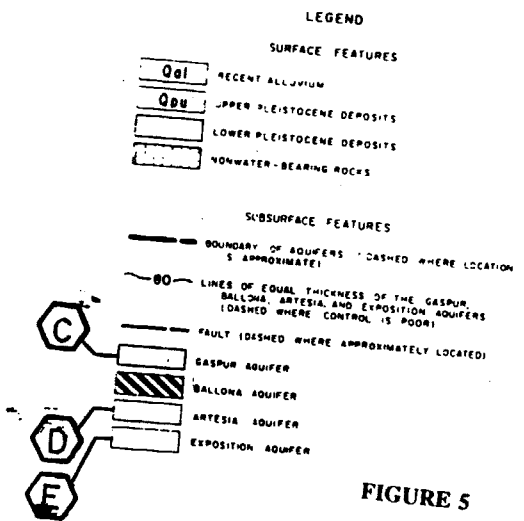
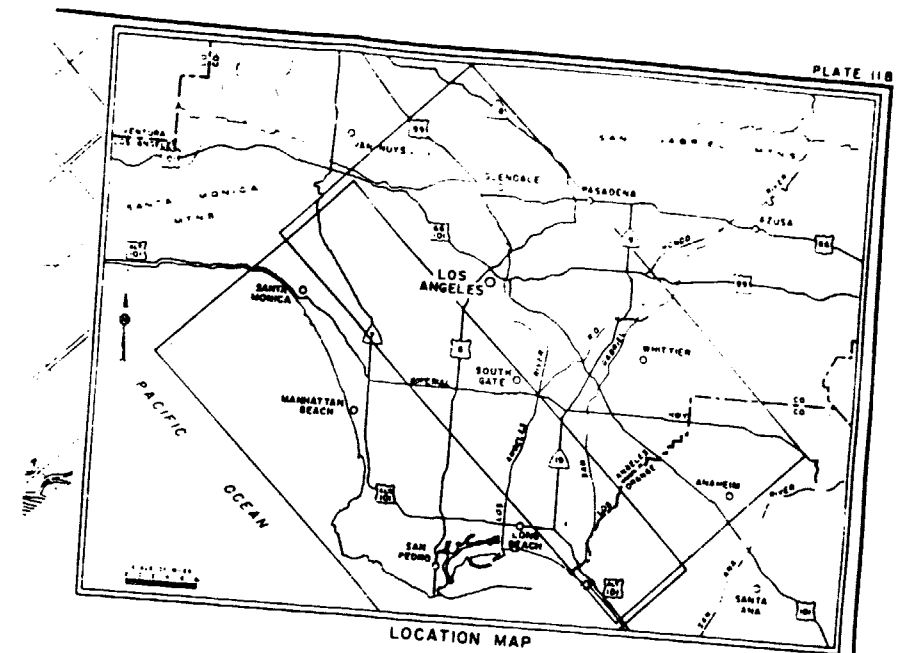
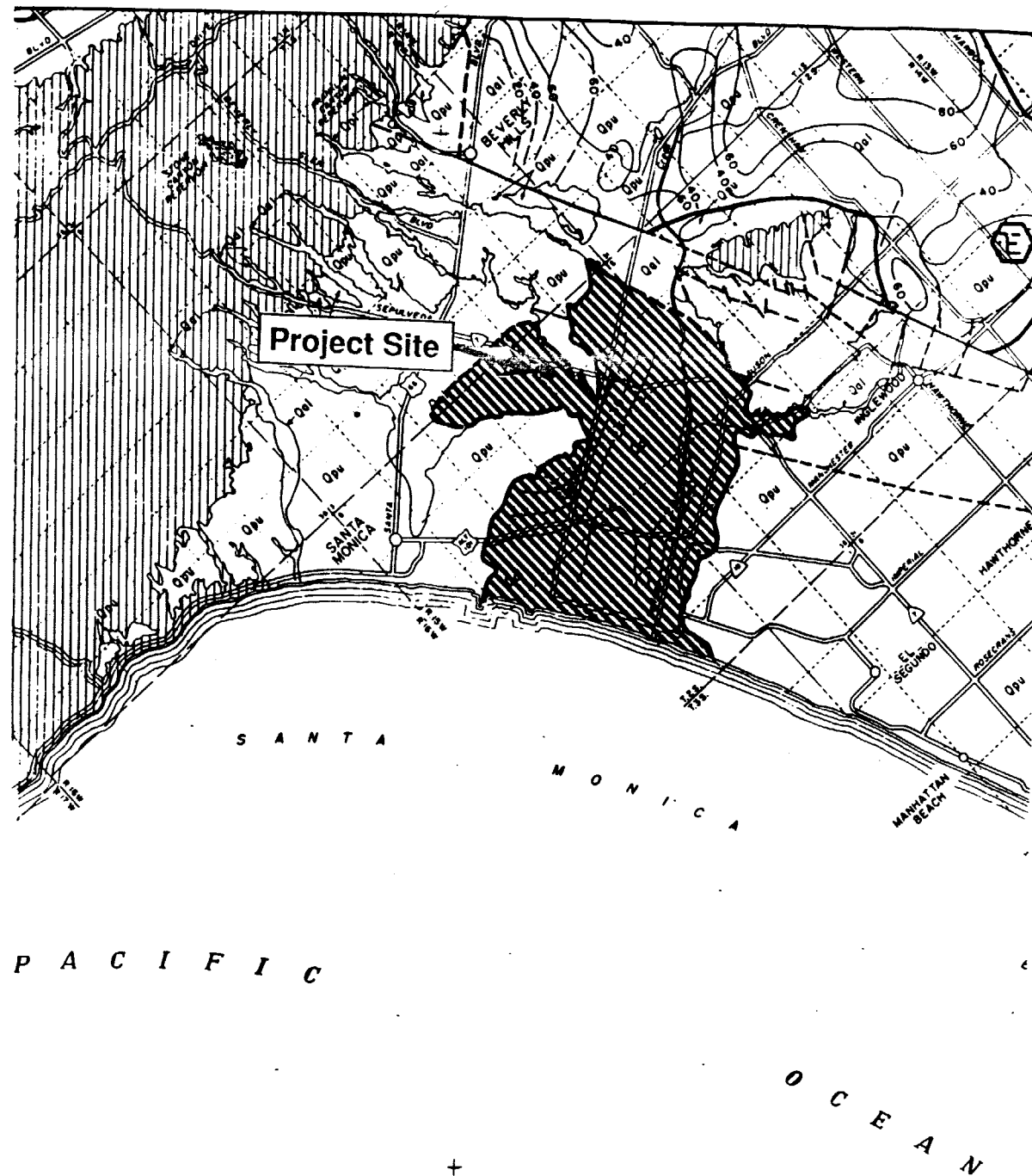


FIGURE 5

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
SOUTHERN CALIFORNIA DISTRICT

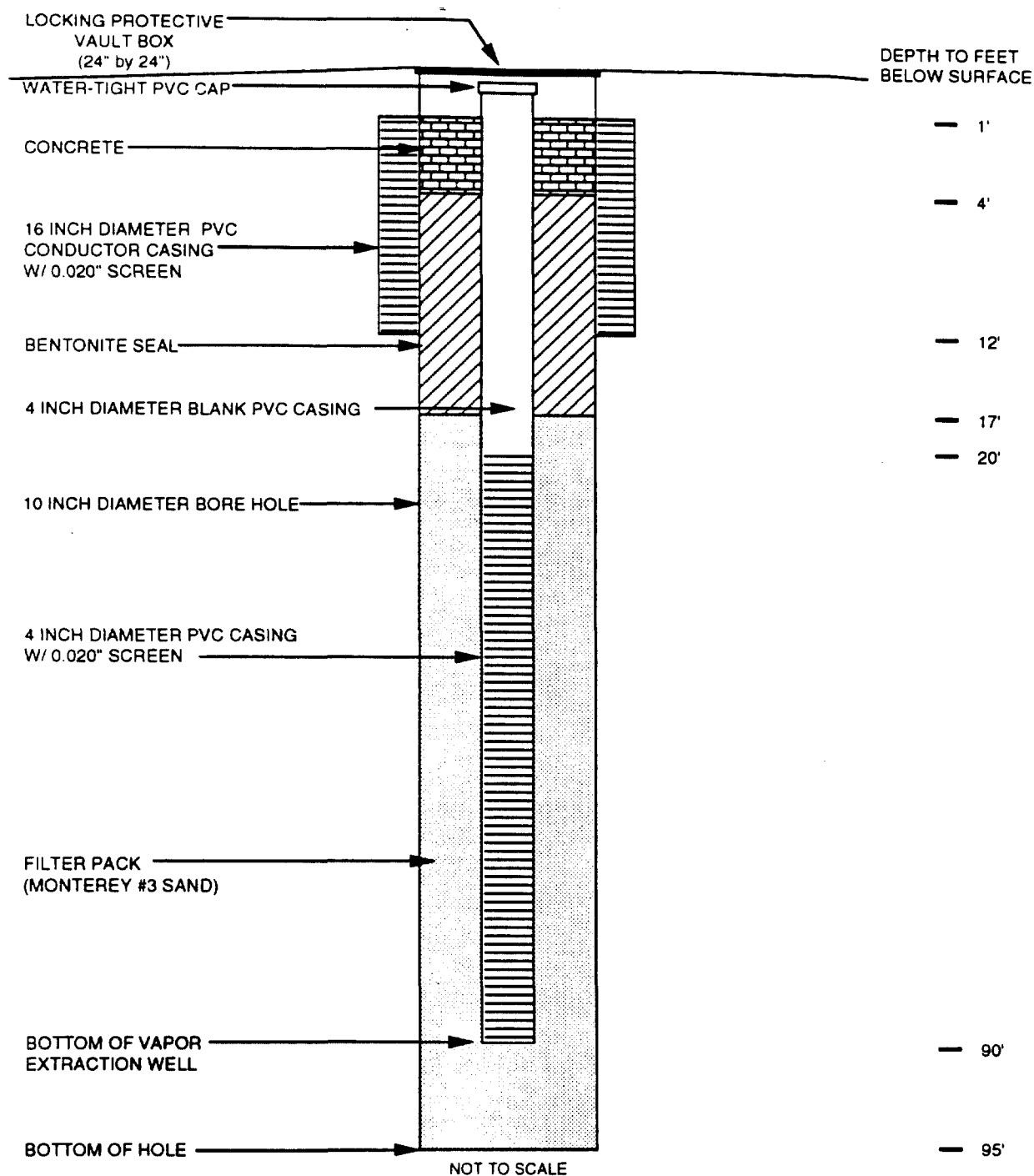
GROUND WATER GEOLOGY OF THE
COASTAL PLAIN OF
LOS ANGELES COUNTY

LINES OF EQUAL THICKNESS
OF THE GASPUR, BALLONA, ARTESIA,
AND EXPOSITION AQUIFERS

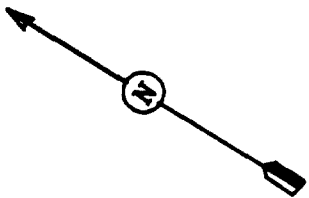
SCALE OF MILES

0 1 2 3

1961

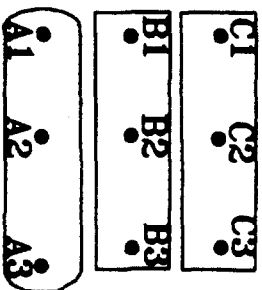
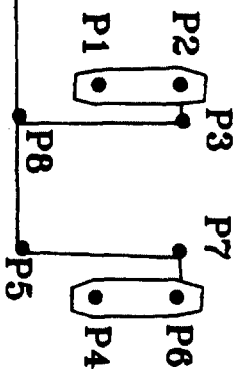
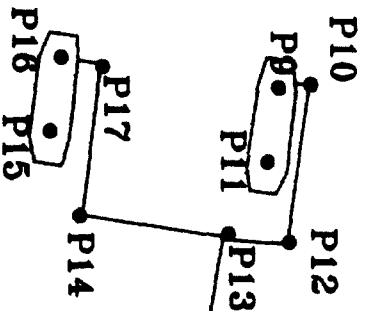
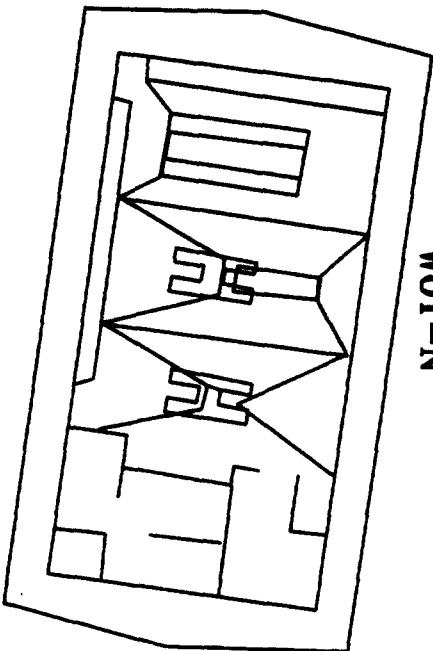


UNOCAL SERVICE STATION #4357
VAPOR EXTRACTION WELL VE-1
FIGURE 6



WOT-S

WOT-N



NOTES:
• SOIL SAMPLE

PL 195'

SAWTELLE BOULEVARD

SCALE

0

19.3'



DEPARTMENT OF ENVIRONMENTAL PROTECTION

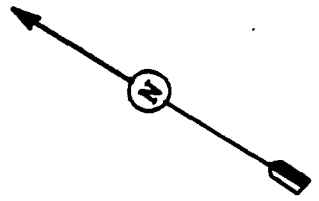
Planning, Outreach

UNOCAL VENTURING & REFINING

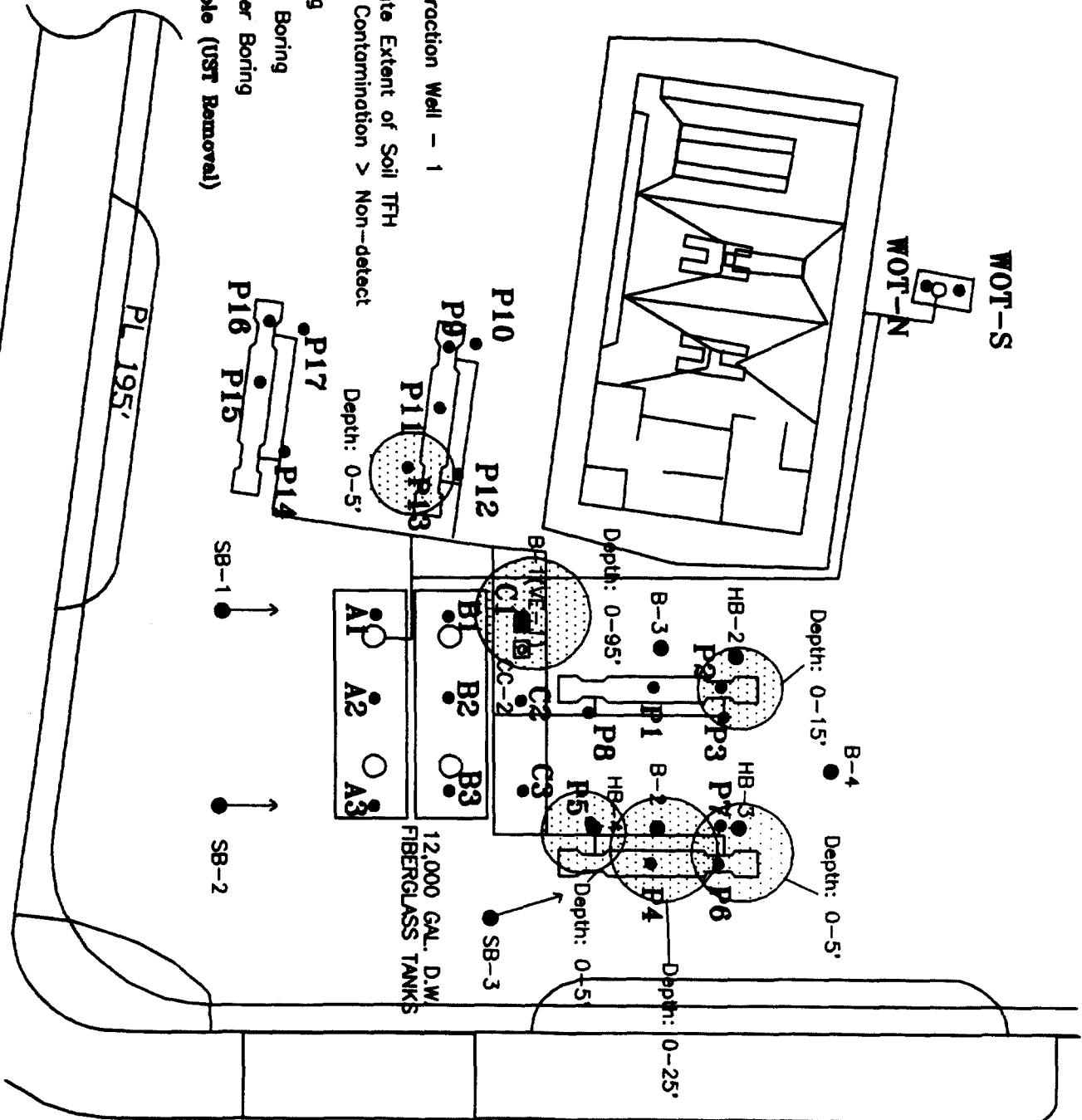
UNOCAL SERVICE STATION NO. 4357

Tank Removal Soil Sample Locations

FIGURE 7



- NOTE:**
- VE-1 Vapor Extraction Well - 1
 - Approximate Extent of Soil TFH & BTEX Contamination > Non-detect
 - B-1 Soil Boring
 - SB-1 Slant Soil Boring
 - HB-1 Hand Auger Boring
 - P-1 Soil Sample (USR Removal)



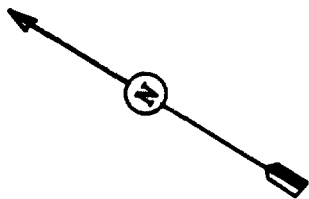
SAWTELLE BOULEVARD

SCALE 19.3'

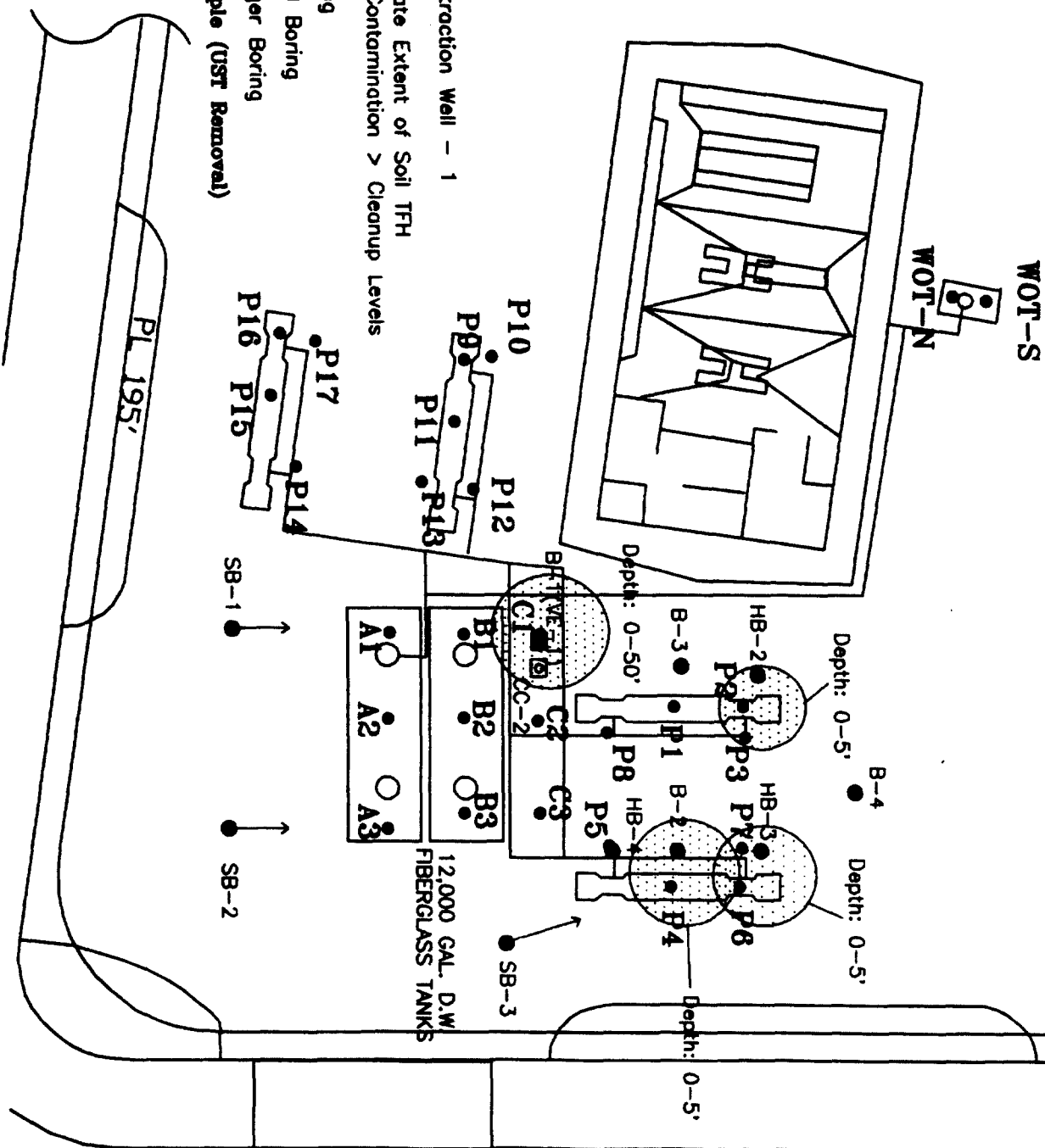
UNOCAL SERVICE STATION NO. 4367

UNOCAL SERVICE STATION NO. 4367

FIGURE 8



- NOTE:
- VE-1 Vapor Extraction Well - 1
 - Approximate Extent of Soil TFH & BTEX Contamination > Cleanup Levels
 - B-1 Soil Boring
 - SB-1 Slant Soil Boring
 - HB-1 Hand Auger Boring
 - P-1 Soil Sample (UST Removal)



SAWTELLE BOULEVARD

SCALE 19.3'

UNOCAL MARKETING & REFINING

UNOCAL SERVICE STATION NO. 4357

FIGURE 9

Soil Iso-concentration Map-TFH & BTEX Greater Than Cleanup Levels

APPENDIX A

**L.A. CITY FIRE/LIFE SAFETY VIOLATION
NOTICE NUMBER 53745**

CITY OF LOS ANGELES
CALIFORNIA

BOARD OF
FIRE COMMISSIONERS
485-6032

CARL R. TERZIAN
PRESIDENT
KENNETH S. WASHINGTON
VICE-PRESIDENT
AILEEN ADAMS
JAMES E. BLANCARTE
NICHOLAS H. STONNINGTON

EVA WHITELOCK
EXECUTIVE ASSISTANT



TOM BRADLEY
MAYOR

DEPARTMENT OF FIRE
200 NORTH MAIN STREET
LOS ANGELES, CA 90012

DONALD O. MANNING
CHIEF ENGINEER
AND
GENERAL MANAGER

January 20, 1993

Mr. Jim Adams
Unocal Corporation
911 Wilshire Boulevard, Suite 1010
Los Angeles, CA 90017

Attention: Mr. Adams:

Unocal Service Station Number 4357
11280 National Boulevard
Los Angeles, California

The Fire Department has reviewed the Closure Report dated December 1992, as submitted by James M. Montgomery Consulting Engineers Incorporated.

Based on the information provided, contamination above this Department's action level exists at this site. Enclosed is Fire/Life Safety Violation Notice Number 53745 to provide a site assessment.

If you require additional information from the Los Angeles City Fire Department, contact Inspector Henry J. Amparan, of the Underground Tank Plan Check Unit, at (213) 485-7543.

Very truly yours,

DONALD O. MANNING
Chief Engineer and General Manager

Richard Camarena
Richard Camarena, Captain I
Commander, Underground Tank Plan Check Unit

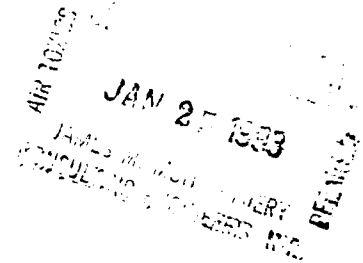
RC:HJA:1a:5589w

Enclosure

cc: James M. Montgomery Consulting
Engineers Incorporated
301 North Lake Avenue, Suite 600
Pasadena, California 91101

Attention: Mr. Najid Rasouli

AN EQUAL EMPLOYMENT OPPORTUNITY - AFFIRMATIVE ACTION EMPLOYER



City of Los Angeles
DEPARTMENT OF FIRE
FIRE/LIFE SAFETY VIOLATION

Nº 53745

OCCUPANCY	DISTRICT	BLOCK NO.	MAP BOOK	PAGE	PARCEL	DATE January 20, 1993
TO: Mr. Jim Adams (Name) (Title)			FIRM OR D.B.A. Unocal Corporation			
ADDRESS: (Street) (City) (State) (Zip Code) 911 Wilshire Boulevard, Los Angeles, CA 90017						PHONE ()
ADDRESS OF VIOLATION: (Street) (City) (State) (Zip Code) 11280 National Boulevard Los Angeles California 90034						
COMPLY WITH REQUIREMENTS AS NOTED						
<input checked="" type="checkbox"/> Provide a Site Assessment performed by a Professional Geologist, Civil Engineer, or an Engineering Geologist who is registered or certified by the State of California and who is experienced in the use of the Unified Soil Classification System. (57.31.38)						
This report shall include but not be limited to the vertical and horizontal extent of contamination using Methods 8015 Modified for Total Petroleum Hydrocarbon, 8020 for BTXE, 7420 for Total Lead, 418.1 for total recoverable petroleum hydrocarbons, location of groundwater using an authoritative source, clean-up recommendations and any other information that may be required by the Chief. Please submit all reports in triplicate to the:						
Bureau of Fire Prevention and Public Safety Underground Tank Plan Check Unit 200 North Main Street, Room 930, City Hall East Los Angeles, California 90012						
<input type="checkbox"/> Secure the area from unauthorized entry. (57.31.50)						
<input type="checkbox"/> No site remediation shall occur until the Fire Department has received and approved a written plan of remediation.						
ADDITIONAL INFORMATION ON <input type="checkbox"/> BACK OF THIS FORM <input type="checkbox"/> ATTACHED SHEET(S)						
FAILURE ON YOUR PART TO COMPLY WITH THIS NOTICE ON OR BEFORE April 20, 1993 WILL SUBJECT YOU TO PENALTIES PRESCRIBED BY SAID ORDINANCE. A REINSPECTION OF THE PREMISES SHALL BE MADE FOR FULL COMPLIANCE.						
RECEIVED BY _____ TITLE _____						
FOR ADDITIONAL INFORMATION PHONE: (213) 485-7541		DATE COMPLETED		BY ORDER OF THE CHIEF ENGINEER AND GENERAL MANAGER BY Henry J. Amparan, UGT Plan Check Unit INSPECTOR SIGNATURE <i>[Signature]</i>		

APPENDIX B

SOIL BORING GEOLOGIC LOGS

BORING NUMBER B-1 **CLIENT** UNOCAL Marketing and Refining
DATE DRILLED 3/3/93 **PROJECT** Service Station #4357
GEOLOGIST Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			6" of asphalt		
			LEAN CLAY, dark brown, moist, firm to stiff, 90% clay with medium plasticity, 15% silt, 5% coarse, subangular sand, micaceous. Contains minor amounts of fine, subangular gravel.	CL	Time = 0718 PID = 0.0 units No hydrocarbon odor
5.0					
			LEAN CLAY, dark brown, moist, firm to stiff, 90% clay with medium plasticity, 15% silt, 5% coarse, subangular sand, micaceous. Contains minor amounts of fine, subangular gravel.	CL	
10					Time = 0823 PID = 0.0 units
15		50-6	SILTY SAND WITH GRAVEL, brown to dark brown, moist, medium dense, 15% non-plastic silt, 30% fine sand, 40% medium, subangular sand, 15% fine to medium, subangular gravel.	SM	Time = 0839 PID = 35 units Recovery = 6" No hydrocarbon odor
20		5 20 28	SILTY SAND WITH GRAVEL, brown to dark brown, moist, medium dense, 10% clay with low plasticity, 25% non-plastic silt, 25% fine sand, 25% medium, subangular sand, 15% fine to medium, subangular gravel.	SM	Time = 0851 PID = 185 units Recovery = 13" Slight hydrocarbon odor
25					

METHOD OF DRILLING	<u>Hollow stem auger</u>	WELL DIAMETER	<u>4.0 inches</u>
HOLE DIAMETER	<u>10.0 inches</u>	WELL MATERIAL	<u>PVC-0.020" SCR</u>
COMPLETION DEPTH	<u>95 feet</u>	WELL DEVELOPMENT	<u>NA</u>

BORING NUMBER B-1 **CLIENT** UNOCAL Marketing and Refining
DATE DRILLED 3/3/93 **PROJECT** Service Station #4357
GEOLOGIST Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
30		50-6	LEAN CLAY, dark brown, slightly moist, stiff 85% clay with low plasticity, 10% silt, 5% fine sand, mottled. Contains trace amounts of gray-brown discoloration.	CL	Driller notes hard drilling at 28' bgl. Time = 0900 PID = 172 units Recovery = 8" Moderate hydrocarbon odor (gasoline)
			CLAYEY SAND, dark brown, moist, dense, 15% clay with low plasticity, 50% fine sand, 25% medium, subangular sand, 10% fine, subangular gravel.	SC	
35					
40		28 50-5	CLAYEY SAND, brown to dark brown, moist, 40% clay with low to medium plasticity, 10% silt, 50% fine sand.	SC	Time = 0912 PID = 152 units Recovery = 15" Moderate to strong hydrocarbon odor (gasoline)
45		50-6	CLAYEY SAND, brown to dark brown, moist, 45% clay with low to medium plasticity, 50% fine sand, 5% fine, subangular gravel.	SC	Time = 1010 PID = 40 units Recovery = 8" Slight hydrocarbon odor
50		50-6	CLAYEY SAND, brown to dark brown, moist, 25% clay with low to medium plasticity, 55% fine sand, 20% fine to coarse, subangular gravel.	SC	Time = 1031 PID = 22 units Recovery = 15" Slight hydrocarbon odor

METHOD OF DRILLING	<u>Hollow stem auger</u>	WELL DIAMETER	<u>4.0 inches</u>
HOLE DIAMETER	<u>10.0 inches</u>	WELL MATERIAL	<u>PVC-0.020" SCR</u>
COMPLETION DEPTH	<u>95 feet</u>	WELL DEVELOPMENT	<u>NA</u>

BORING NUMBER B-1 CLIENT UNOCAL Marketing and Refining
 DATE DRILLED 3/3/93 PROJECT Service Station #4357
 GEOLOGIST Manuel Saenz/Dan Johnson

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
		50-6	CLAYEY SAND, brown to dark brown, moist, 25% clay with low to medium plasticity, 55% fine sand, 20% fine to coarse, subangular gravel.	SC	Time = 1031 PID = 22 units Recovery = 15" Slight hydrocarbon odor
55		50-6	LEAN CLAY, light brown, slightly moist to moist, stiff 70% clay with low plasticity, 30% silt, slightly oxidized, micaceous.	CL	Time = 1038 PID = 15.2 units Recovery = 7" No hydrocarbon odor
			SILTY SAND, brown to dark brown, moist, dense, 15% silt, 70% fine sand, 5% medium, subangular sand, 10% fine, subangular gravel.	SM	
60		9 17 22	SAND, light brown, moist, medium dense, 10% non-plastic silt, 90% very fine to fine sand.	SP	Time = 1038 PID = 24 units Recovery = 7" Slight hydrocarbon odor
65		10 27 36	SAND, light yellow-brown, moist, dense, 15% non-plastic silt, 80% fine sand, 5% medium, subrounded sand. Contains trace amounts of dark brown silt nodules.	SP	Time = 1035 PID = 32 units Recovery = 10" Slight hydrocarbon odor
70		17 50	SAND, light yellow-brown, moist, very dense, 15% non-plastic silt, 80% fine sand, 5% medium, subrounded sand. Contains trace amounts of dark brown silt nodules.	SP	Time = 1115 PID = 5 units Recovery = 12" No hydrocarbon odor
75		9 28 35	SAND, yellow-brown, moist, dense, 75% fine sand, 25% medium, subrounded sand. Contains trace amounts of coarse, subrounded sand.	SP	Time = 1130 PID = 18 units Recovery = 14" No hydrocarbon odor

METHOD OF DRILLING	<u>Hollow stem auger</u>	WELL DIAMETER	<u>4.0 inches</u>
HOLE DIAMETER	<u>10.0 inches</u>	WELL MATERIAL	<u>PVC-0.020" SCR</u>
COMPLETION DEPTH	<u>95 feet</u>	WELL DEVELOPMENT	<u>NA</u>

BORING NUMBER B-1 **CLIENT** UNOCAL Marketing and Refining
DATE DRILLED 3/3/93 **PROJECT** Service Station #4357
GEOLOGIST Manuel Saenz/Dan Johnson

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
		9	SAND, yellow-brown, moist, dense, 75% fine sand, 25% medium, subrounded sand. Contains trace amounts of coarse, subrounded sand.	SP	Time = 1130 PID = 18 units Recovery = 14" No hydrocarbon odor
		28			
		35			

80		28	SAND, orange-brown, moist, very dense, 35% fine sand, 30% medium, subangular to subrounded sand 20% coarse, subrounded sand, 15% fine, subrounded to rounded gravel. Contains trace amounts of brown, fine sand nodules.	SW	Time = 1150 PID = 38 units Recovery = 16" Slight hydrocarbon odor
		50-			
		6			
85		18	SAND, orange-brown, moist, medium dense, 30% fine sand, 40% medium, subrounded sand 20% coarse, subrounded sand, 10% fine, subrounded to rounded gravel. Contains trace amounts of brown, fine sand nodules.	SW	Time = 1200 PID = 12 units Recovery = 16" Slight hydrocarbon odor
		22			
		25			
90		19	SAND, orange-brown, moist, medium dense, 30% fine sand, 40% medium, subrounded sand 20% coarse, subrounded sand, 10% fine, subrounded to rounded gravel. Contains trace amounts of brown, fine sand nodules.	SW	Time = 1210 PID = 18 units Recovery = 12" Slight hydrocarbon odor
		25			
		32			
95		19	SAND, orange-brown, moist, medium dense, 30% fine sand, 40% medium, subrounded sand 20% coarse, subrounded sand, 10% fine, subrounded to rounded gravel. Contains trace amounts of brown, fine sand nodules.	SW	Time = 1220 PID = 15 units Recovery = 14" Slight hydrocarbon odor
		25			
		32			
			BOTTOM OF HOLE		
100			Groundwater not encountered.		

METHOD OF DRILLINGHollow stem auger**WELL DIAMETER**4.0 inches**HOLE DIAMETER**10.0 inches**WELL MATERIAL**PVC-0.020" SCR**COMPLETION DEPTH**95 feet**WELL DEVELOPMENT**NA

BORING NUMBER

B-2

CLIENT

UNOCAL Marketing and Refining

DATE DRILLED

3/4/93

PROJECT

Service Station #4357

GEOLOGIST

Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			10" of concrete		Time = 0735 Airknife down to 5' bgl.
5.0			LEAN CLAY, dark brown, moist, stiff, 85% clay with low plasticity, 10% non-plastic silt, 5% fine sand, Contains minor amounts of fine, subangular gravel.	CL	Time = 0802 PID = 77 units Recovery = 6" No hydrocarbon odor
			LEAN CLAY, dark brown, moist, stiff, 85% clay with low plasticity, 10% non-plastic silt, 5% fine sand, Contains minor amounts of fine, subangular gravel.	CL	Time = 0839 PID = 180 units No hydrocarbon odor
10		7	LEAN CLAY, green-brown to brown, moist, firm to soft, 80% clay with medium plasticity, 20% silt. Contains minor amounts of fine, subangular gravel.	CL	Time = 0822 PID = 123 units Recovery = 18" Moderate hydrocarbon odor
		7			
		9			
15		10	SILT WITH CLAY, green-brown to brown, moist, soft, 40% clay with medium plasticity, 60% silt. Contains minor amounts of oxidation spots.	ML	Time = 0844 PID = 172 units Recovery = 18" Slight to moderate hydrocarbon odor
		12			
		17			
			LEAN CLAY, green-brown to dark brown, moist, firm to soft, 80% clay with medium plasticity, 20% silt.	CL	
20		12	SILT WITH CLAY, dark brown, moist, soft, 40% clay with medium plasticity, 45% silt, 15% fine sand.	ML	Time = 0917 PID = 152 units Recovery = 18" Slight hydrocarbon odor
		12			
		15			
			LEAN CLAY, dark brown, moist, firm, 75% clay with low plasticity, 20% silt, 5% fine sand.	CL	PID = 138 units Slight hydrocarbon odor
25			LEAN CLAY, dark brown, moist, stiff, 75% clay with low plasticity, 20% silt, 5% fine sand. Contains slight black discoloration.	CL	T= 0935 PID = 122 units Slight hydrocarbon odor
			BOTTOM OF HOLE		
			Abandoned boring at 28' bgl.		

METHOD OF DRILLING

Hollow stem auger

WELL DIAMETER

NA

HOLE DIAMETER

8.0 inches

WELL MATERIAL

NA

COMPLETION DEPTH

28 feet

WELL DEVELOPMENT

NA

BORING NUMBER

B-3

CLIENT

UNOCAL Marketing and Refining

DATE DRILLED

3/3/93

PROJECT

Service Station #4357

GEOLOGIST

Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			10" of concrete		
			LEAN CLAY, dark brown, moist, soft to firm, 90% clay with medium plasticity, 10% silt, micaceous, Contains minor amounts of fine, subangular gravel.	CL	Time = 1335 Airknife down to 5' bgl. Time = 1521 PID = 1.0 units No hydrocarbon odor
5.0			LEAN CLAY, dark brown, moist, firm to stiff, 80% clay with medium plasticity, 15% silt, 5% coarse, subangular sand, micaceous. Contains minor amounts of fine, subangular gravel.	CL	Time = 1700 PID = 1.0 units No hydrocarbon odor
10		30 33 38	LEAN CLAY, dark brown, moist, firm to stiff, 80% clay with medium plasticity, 15% silt, 5% coarse, subangular sand. Contains minor amounts of fine, subangular gravel.	CL	Time = 1712 PID = 1.0 units Recovery = 8" No hydrocarbon odor
15		15 18 22	SILT WITH CLAY, dark brown, moist, soft, 15% clay with medium plasticity, 75% silt, 5% fine sand, 5% fine, subangular gravel, micaceous.	ML	Time = 1719 PID = 2.0 units Recovery = 16" No hydrocarbon odor
20		15 18 20	SILT WITH CLAY, dark brown, moist, soft, 15% clay with medium plasticity, 70% silt, 10% fine sand, 5% fine, subangular gravel, micaceous.	ML	Time = 1724 PID = 1.0 units Recovery = 12" No hydrocarbon odor
			?		
25			SILTY SAND, brown, moist, medium dense, 20% non-plastic silt, 50% fine sand, 25% medium, subangular sand, micaceous.	SM	
			?		
			LEAN CLAY, dark brown, moist, stiff, 90% clay with low plasticity, 10% silt, slightly mottled.	CL	

METHOD OF DRILLING

Hollow stem auger

WELL DIAMETER

NA

HOLE DIAMETER

8.0 inches

WELL MATERIAL

NA

COMPLETION DEPTH

40 feet

WELL DEVELOPMENT

NA

BORING NUMBER B-3 CLIENT UNOCAL Marketing and Refining
 DATE DRILLED 3/3/93 PROJECT Service Station #4357
 GEOLOGIST Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			_____ ? _____		
			LEAN CLAY, dark brown, moist, stiff, 90% clay with low plasticity, 10% silt, slightly mottled.	CL	
30		22	LEAN CLAY, dark brown, moist, stiff, 90% clay with low plasticity, 10% silt, slightly mottled.	CL	Time = 1742 PID = 0.0 units Recovery = 17" No hydrocarbon odor
		28			
		35			
35			LEAN CLAY, dark brown, moist, stiff, 90% clay with low plasticity, 10% silt, slightly mottled.	CL	
			_____ ? _____		
40		18	CLAYEY SAND, brown to dark brown, moist, 20% clay with low plasticity, 15% silt, 65% fine sand.	SC	Time = 1750 PID = 1.0 units Recovery = 15" No hydrocarbon odor
		28			
		38			
			_____ BOTTOM OF HOLE _____		
45			Groundwater not encountered		

METHOD OF DRILLING	<u>Hollow stem auger</u>	WELL DIAMETER	<u>NA</u>
HOLE DIAMETER	<u>8.0 inches</u>	WELL MATERIAL	<u>NA</u>
COMPLETION DEPTH	<u>40 feet</u>	WELL DEVELOPMENT	<u>NA</u>

BORING NUMBER

B-4

CLIENT

UNOCAL Marketing and Refining

DATE DRILLED

3/5/93

PROJECT

Service Station #4357

GEOLOGIST

Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			5" of asphalt		Time = 1505
			LEAN CLAY, gray-black, moist, stiff, 90% clay with low plasticity, 10% non-plastic silt. Contains minor amounts of black disseminations.	CL	Time = 1549 PID = 0.0 No hydrocarbon odor Airknife down to 5' bgl
5.0			LEAN CLAY, brown-black, moist, stiff, 90% clay with low plasticity, 10% non-plastic silt. Contains minor amounts of black disseminations.	CL	Time = 1610 PID = 0.0 No hydrocarbon odor
10		9 18 22	LEAN CLAY, brown, moist, soft to firm, 90% clay with medium plasticity, 10% silt. Contains minor amounts of oxidation and black organics.	CL	Time = 1615 PID = 0.0 units Recovery = 18" No hydrocarbon odor
15			LEAN CLAY, brown, moist, soft to firm, 90% clay with medium plasticity, 10% silt. Contains minor amounts of oxidation and black organics.	CL	
20		6 11 13	LEAN CLAY, brown, moist, soft to firm, 90% clay with medium plasticity, 10% silt. Contains minor amounts of oxidation and black organics.	CL	Time = 1625 PID = 0.0 units Recovery = 18" No hydrocarbon odor
			BOTTOM OF HOLE		
			Groundwater not encountered		
25					

METHOD OF DRILLING

Hollow stem auger

WELL DIAMETER

NA

HOLE DIAMETER

8.0 inches

WELL MATERIAL

NA

COMPLETION DEPTH

20 feet

WELL DEVELOPMENT

NA

BORING NUMBER	<u>HB-2</u>	CLIENT	<u>UNOCAL Marketing and Refining</u>
DATE DRILLED	<u>3/4/93</u>	PROJECT	<u>Service Station #4357</u>
INCLINATION	<u>10°</u>	GEOLOGIST	<u>Manuel Saenz</u>

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			8" of concrete 2" of pea gravel		Time = 1255 Airknife down to 5' bgl.
			LEAN CLAY, dark brown, moist, firm to stiff, 90% clay with low plasticity, 10% silt, slightly micaceous. Contains minor amounts of dark brown-black discolorations.	CL	Time = 1330 PID = 0.0 units No hydrocarbon odor
2.5			LEAN CLAY, dark brown, moist, firm to stiff, 70% clay with low plasticity, 10% silt, 20% fine to coarse, subangular sand, slightly micaceous.	CL	Time = 1350 PID = 1.0 units No hydrocarbon odor
5			LEAN CLAY, dark brown, moist, firm to stiff, 70% clay with low plasticity, 10% silt, 20% fine to coarse, subangular sand, slightly micaceous.	CL	Time = 1435 PID = 1.0 units No hydrocarbon odor
7.5			LEAN CLAY, dark brown, moist, firm to stiff, 65% clay with low plasticity, 10% silt, 10% fine sand, 15% coarse, subangular sand.	CL	Time = 1450 PID = 2.0 units No hydrocarbon odor
10			LEAN CLAY, dark brown, moist, firm to stiff, 65% clay with low plasticity, 10% silt, 25% coarse, subangular sand.	CL	Time = 1636 Recovery = 6" PID = 1.5 units No hydrocarbon odor
			BOTTOM OF HOLE		
			Groundwater not encountered.		
12.5					

METHOD OF DRILLING	<u>Hand auger</u>	WELL DIAMETER	<u>NA</u>
HOLE DIAMETER	<u>3.0 inches</u>	WELL MATERIAL	<u>NA</u>
COMPLETION DEPTH	<u>10 feet</u>	WELL DEVELOPMENT	<u>NA</u>



BORING NUMBER	<u>HB-3</u>	CLIENT	<u>UNOCAL Marketing and Refining</u>
DATE DRILLED	<u>3/5/93</u>	PROJECT	<u>Service Station #4357</u>
INCLINATION	<u>10°</u>	GEOLOGIST	<u>Manuel Saenz</u>

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			8" of concrete		Time = 1303 Airknife down to 5' bgl.
			LEAN CLAY, dark brown, moist, stiff, 80% clay with low plasticity, 20% silt, micaceous.	CL	Time = 1308 PID = 0.0 units No hydrocarbon odor
2.5			LEAN CLAY, dark brown, moist, stiff, 80% clay with low plasticity, 20% silt, micaceous.	CL	Time = 1325 PID = 0.0 units No hydrocarbon odor
5			LEAN CLAY, dark brown, moist, stiff, 85% clay with low plasticity, 15% silt, slightly micaceous and mottled.	CL	Time = 1430 PID = 0.0 units No hydrocarbon odor
7.5			LEAN CLAY, dark brown, moist, stiff, 85% clay with low plasticity, 15% silt, slightly micaceous and mottled.	CL	Time = 1442 PID = 0.0 units No hydrocarbon odor
10			LEAN CLAY, dark brown, moist, stiff, 85% clay with low plasticity, 15% silt, slightly micaceous.	CL	Time = 1453 PID = 0.0 units Recovery = 6" No hydrocarbon odor
			BOTTOM OF HOLE		
			Groundwater not encountered.		
12.5					

METHOD OF DRILLING

Hand auger

HOLE DIAMETER

3.0 inches

COMPLETION DEPTH

10 feet

WELL DIAMETER

NA

WELL MATERIAL

NA

WELL DEVELOPMENT

NA



BORING NUMBER HB-3 CLIENT UNOCAL Marketing and Refining
 DATE DRILLED 3/5/93 PROJECT Service Station #4357
 INCLINATION 10° GEOLOGIST Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			8" of concrete.		Time = 1045
			2" of coarse, subangular to surrounded sand		Airknife down to 5' bgl.
			LEAN CLAY, dark brown, moist, stiff, 80% clay with low plasticity, 20% silt, micaceous.	CL	Time = 1112
					PID = 0.0 units
					No hydrocarbon odor
2.5			LEAN CLAY, dark brown, moist, stiff, 80% clay with low plasticity, 20% silt, micaceous.	CL	
5			LEAN CLAY, dark brown, moist, stiff, 65% clay with low plasticity, 35% silt, micaceous.	CL	Time = 1130
					PID = 0.0 units
					No hydrocarbon odor
7.5			SILT WITH CLAY, dark brown, moist, firm to stiff, 30% clay with low plasticity, 70% silt, micaceous. Contains minor amounts of fine, subangular gravel.	ML	Time = 1141
					PID = 0.0 units
					No hydrocarbon odor
10			LEAN CLAY, dark brown, moist, stiff, 65% clay with low plasticity, 35% silt, micaceous.	CL	Time = 1153
					PID = 0.0 units
					Recovery = 6"
					No hydrocarbon odor
			BOTTOM OF HOLE		
			Groundwater not encountered.		
12.5					

METHOD OF DRILLING Hand auger WELL DIAMETER NA
 HOLE DIAMETER 3.0 inches WELL MATERIAL NA
 COMPLETION DEPTH 10 feet WELL DEVELOPMENT NA



BORING NUMBER	<u>SB-1</u>	CLIENT	<u>UNOCAL Marketing and Refining</u>
DATE DRILLED	<u>3/3/93</u>	PROJECT	<u>Service Station #4357</u>
INCLINATION	<u>25°</u>	GEOLOGIST	<u>Manuel Saenz</u>

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			5" of asphalt		Date = 3/4/93 Time = 1341
5.0			LEAN CLAY, dark brown, slightly moist, stiff, 80% clay with medium plasticity, 15% silt, 5% fine sand, Contains minor amounts of black disseminations and slightly mottled.	CL	Time = 1802 PID = 0.0 No hydrocarbon odor Airknife down to 5' bgl.
			LEAN CLAY, dark brown, slightly moist, stiff, 80% clay with medium plasticity, 15% silt, 5% fine sand, Contains minor amounts of black disseminations and slightly mottled.	CL	Date = 3/5/93 Time = 0703 PID = 0.0 units No hydrocarbon odor Time = 0730 PID = 5.0 units No hydrocarbon odor
10		4 13 16	LEAN CLAY, dark brown, slightly moist, stiff, 55% clay with medium plasticity, 35% silt, 5% fine sand, %5 fine, subangular gravel.	CL	Time = 0748 PID = 4.2 units Recovery = 15" No hydrocarbon odor
15		15 18 22	? SILT WITH CLAY, dark brown, moist, soft, 20% clay with medium plasticity, 70% silt, 5% fine sand, 5% fine, subangular gravel, micaceous.	ML	Time = 0754 PID = 4.0 units Recovery = 15" No hydrocarbon odor
20		15 18 20	? SILTY SAND, brown, moist, medium dense, 10% clay with low plasticity, 20% non-plastic silt, 65% fine sand, 5% fine, subangular gravel, micaceous.	SM	Time = 0757 PID = 2.6 units Recovery = 18" No hydrocarbon odor
25			SILTY SAND, brown, moist, medium dense, 10% clay with low plasticity, 20% non-plastic silt, 60% fine sand, 10% fine to coarse, subangular gravel, micaceous.	SM	Time = 0801 PID = 3.2 units No hydrocarbon odor

METHOD OF DRILLING

Hollow stem auger

WELL DIAMETER

NA

HOLE DIAMETER

8.0 inches

WELL MATERIAL

NA

COMPLETION DEPTH

45 feet

WELL DEVELOPMENT

NA



BORING NUMBER SB-1 CLIENT UNOCAL Marketing and Refining
 DATE DRILLED 3/5/93 PROJECT Service Station #4357
 INCLINATION 25° GEOLOGIST Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			SILTY SAND, brown, moist, medium dense, 10% clay with low plasticity, 20% non-plastic silt, 60% fine sand, 10% fine to coarse, subangular gravel, micaceous.	SM	Time = 0801 PID = 3.2 units No hydrocarbon odor
30		13 20 27	LEAN CLAY, dark brown, moist, stiff, 85% clay with low plasticity, 15% silt, slightly mottled. Contains minor amounts of gray-black discoloration, and fine, subangular to subrounded gravel.	CL	Time = 0808 PID = 2.8 units Recovery = 18" No hydrocarbon odor
35			LEAN CLAY, dark brown, moist, stiff, 85% clay with low plasticity, 15% silt, slightly mottled. Contains minor amounts of gray-black discoloration, and coarse, subangular sand.	CL	Time = 0810 PID = 5.0 units No hydrocarbon odor
40		17 21 24	CLAYEY SAND, brown to dark brown, moist, medium dense, 20% clay with low to medium plasticity, 15% silt, 65% fine sand.	SC	Time = 0815 PID = 1.1 units Recovery = 17" No hydrocarbon odor
45			CLAY, dark brown, moist, stiff, 90% clay with low plasticity, 10% silt. Contains minor amounts of fine, subangular gravel.	CL	Time = 0926 PID = 3.0 units No hydrocarbon odor
			SILTY SAND WITH CLAY, brown to orange-brown, moist, medium dense, 15% clay with low plasticity, 20% non-plastic silt, 30% fine sand, 25% medium, subangular to subrounded sand, 15% fine to coarse, subangular gravel, slightly oxidized.	SM	Time = 0931 PID = 2.4 units Recovery = 8" No hydrocarbon odor
			BOTTOM OF HOLE		
			Groundwater not encountered		

METHOD OF DRILLING Hollow stem auger WELL DIAMETER NA
 HOLE DIAMETER 8.0 inches WELL MATERIAL NA
 COMPLETION DEPTH 45 feet WELL DEVELOPMENT NA



BORING NUMBER	<u>SB-2</u>	CLIENT	<u>UNOCAL Marketing and Refining</u>
DATE DRILLED	<u>3/5/93</u>	PROJECT	<u>Service Station #4357</u>
INCLINATION	<u>20°</u>	GEOLOGIST	<u>Manuel Saenz</u>

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			4" of asphalt		Date = 3/4/93 Time = 1800 PID = 0.0 Time = 1802 PID = 0.0 No hydrocarbon odor Airknife down to 5' bgl.
5.0			LEAN CLAY, dark brown, slightly moist, firm to stiff, 80% clay with low plasticity, 15% silt, 5% fine to coarse, subangular gravel. Contains minor amounts of black disseminations and slightly mottled.	CL	
			SAND, orange-brown, slightly moist, stiff, 10% silt, 25% fine sand, 65% medium sand, highly oxidized.	SP	Time = 1825 PID = 0.0 No hydrocarbon odor
			LEAN CLAY, dark brown, slightly moist, firm to stiff, 60% clay with low plasticity, 40% silt.	CL	
10		8 12 15	LEAN CLAY, dark brown, slightly moist, stiff, 60% clay with low plasticity, 40% silt. Contains minor amounts of fine to medium, subangular gravel.	CL	Date = 3/5/93 Time = 1039 PID = 4.2 units Recovery = 18" No hydrocarbon odor
15		10 18 22	LEAN CLAY, dark brown, slightly moist, to stiff, 75% clay with low plasticity, 25% silt. Contains minor amounts of fine to medium, subangular gravel.	CL	Time = 1043 PID = 3.8 units Recovery = 18" No hydrocarbon odor
20		10 15 23	? SILT WITH CLAY, dark brown, moist, soft, 40% clay with low plasticity, 60% silt, micaceous. Contains minor amounts of coarse, subrounded sand.	ML	Time = 1043 PID = 3.8 units Recovery = 18" No hydrocarbon odor
25			? LEAN CLAY, dark brown, slightly moist, to stiff, 65% clay with low plasticity, 30% silt, 5% fine sand, mottled and micaceous.	CL	Time = 1053 PID = 4.4 units No hydrocarbon odor

METHOD OF DRILLING

Hollow stem auger

WELL DIAMETER

NA

HOLE DIAMETER

8.0 inches

WELL MATERIAL

NA

COMPLETION DEPTH

40 feet

WELL DEVELOPMENT

NA



BORING NUMBER	<u>SB-2</u>	CLIENT	<u>UNOCAL Marketing and Refining</u>
DATE DRILLED	<u>3/5/93</u>	PROJECT	<u>Service Station #4357</u>
INCLINATION	<u>20°</u>	GEOLOGIST	<u>Manuel Saenz</u>

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			LEAN CLAY, dark brown, slightly moist, to stiff, 65% clay with low plasticity, 30% silt, 5% fine sand, mottled and micaceous.	CL	Time = 1053 PID = 4.4 units No hydrocarbon odor
30		19 27 30	LEAN CLAY, dark brown, slightly moist, to stiff, 75% clay with low plasticity, 25% silt, mottled and micaceous. Contains minor amounts of coarse, subangular gravel.	CL	Time = 1055 PID = 3.8 units Recovery = 18" No hydrocarbon odor
35			LEAN CLAY, dark brown, slightly moist, to stiff, 75% clay with low plasticity, 25% silt, mottled and micaceous. Contains minor amounts of fine to coarse, subangular gravel.	CL	Time = 1101 PID = 6.1 units No hydrocarbon odor
40		19 27 30	CLAYEY SAND, brown, moist, medium dense, 25% clay with low plasticity, 20% silt, 55% fine sand. Contains minor amounts of medium, subangular sand.	SC	Time = 1106 PID = 3.8 units Recovery = 18" No hydrocarbon odor
			BOTTOM OF HOLE		
45			Groundwater not encountered		

METHOD OF DRILLING	<u>Hollow stem auger</u>	WELL DIAMETER	<u>NA</u>
HOLE DIAMETER	<u>8.0 inches</u>	WELL MATERIAL	<u>NA</u>
COMPLETION DEPTH	<u>40 feet</u>	WELL DEVELOPMENT	<u>NA</u>



BORING NUMBER SB-3 CLIENT UNOCAL Marketing and Refining
 DATE DRILLED 3/5/93 PROJECT Service Station #4357
 INCLINATION 25° GEOLOGIST Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			4" of asphalt		
			LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt., slightly mottled.	CL	Time = 1300 PID = 0.0 units Time = 1310 PID = 0.0 units No hydrocarbon odor Airknife down to 5' bgl.
5.0			LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt., slightly mottled.	CL	
10			LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt., slightly mottled.	CL	
15		9 12 15	LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt., slightly mottled. Contains minor amounts of fine sand.	CL	
20			LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt., slightly mottled. Contains minor amounts of fine sand.	CL	Time = 1335 PID = 4.2 units No hydrocarbon odor
25			LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt, 5% fine sand, slightly mottled.	CL	Time = 1342 PID = 4.2 units No hydrocarbon odor

METHOD OF DRILLING	<u>Hollow stem auger</u>	WELL DIAMETER	<u>NA</u>
HOLE DIAMETER	<u>8.0 inches</u>	WELL MATERIAL	<u>NA</u>
COMPLETION DEPTH	<u>50 feet</u>	WELL DEVELOPMENT	<u>NA</u>



BORING NUMBER SB-3 CLIENT UNOCAL Marketing and Refining
 DATE DRILLED 3/5/93 PROJECT Service Station #4357
 INCLINATION 25° GEOLOGIST Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt, 5% fine sand, slightly mottled.	CL	Time = 1342 PID = 4.2 units No hydrocarbon odor
30		17	LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt, 5% fine sand, slightly mottled. Contains minor amounts of gray-black discoloration.	CL	Time = 1348 PID = 3.0 units Recovery = 16" No hydrocarbon odor
		19			
		28			
35			LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt, 5% fine sand, slightly mottled. Contains minor amounts of gray-black discoloration.	CL	
40		20	LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt, 5% fine sand, slightly mottled. Contains minor amounts of gray-black discoloration.	CL	Time = 1355 PID = 2.0 units Recovery = 18" No hydrocarbon odor
		27			
		31			
45			LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt, 5% fine sand, slightly mottled. Contains minor amounts of gray-black discoloration.	CL	Time = 1401 PID = 2.2 units No hydrocarbon odor
50		21	LEAN CLAY, dark brown, slightly moist, stiff, 85% clay with low plasticity, 15% silt, 5% fine sand, slightly mottled. Contains minor amounts of gray-black discoloration.	CL	Time = 1406 PID = 2.0 units Recovery = 18" No hydrocarbon odor
		22			
		28			
			BOTTOM OF HOLE		
			Groundwater not encountered		

METHOD OF DRILLING	<u>Hollow stem auger</u>	WELL DIAMETER	<u>NA</u>
HOLE DIAMETER	<u>8.0 inches</u>	WELL MATERIAL	<u>NA</u>
COMPLETION DEPTH	<u>50 feet</u>	WELL DEVELOPMENT	<u>NA</u>

APPENDIX C

**LABORATORY REPORT &
CHAIN-OF-CUSTODY FORMS**



Southwest Region
20000 / 300 Mariner Drive
Torrance, CA 90503
(310) 371-1044
(800) 727-GTEL
Fax (310) 371-8720

GTEL Client Number: JMM03.UNC03
Project I.D.: Unocal 4357
Work Order Number: T303047

March 11, 1993

Mr. Max Rasouli
James M. Montgomery
250 North Madison Avenue
Pasadena, CA 91109-7009

Dear Mr. Rasouli,

Enclosed please find the analytical results for the samples received by GTEL Environmental Laboratories, Inc. on 3-3-93 under chain-of-custody records 76-9858, 76-9859, 76-9857, 76-9864 and 76-9863.

A formal Quality Assurance/Quality Control (QA/QC) program is maintained by GTEL, which is designed to meet or exceed the EPA requirements. Analytical work for this project met QA/QC criteria unless otherwise stated in the footnotes.

GTEL Mobile Laboratory is certified by the state of California under Certification #1619.

If you have any questions concerning this analysis or if we can be of further assistance, please call our Customer Service Representative.

Sincerely,

GTEL Environmental Laboratories, Inc.

A handwritten signature in black ink, appearing to read 'W. M. Jow', is written over a horizontal line.

William M. Jow
Western Region Mobile Laboratory Manager

GTEL Client Number: JMM03.UNC03
 Project I.D.: Unocal 4357
 Work Order Number: T303047

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015a

GTEL Sample Number		Lab Blank	03047-1	03047-2	03047-3
Client Identification		--	B-1-15'	B-1-20'	B-1-30'
Date Sampled		3-3-93	3-3-93	3-3-93	3-3-93
Date Extracted		3-3-93	3-3-93	3-3-93	3-3-93
Date Analyzed		3-3-93	3-3-93	3-3-93	3-3-93
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.50	<0.025
Toluene	0.005	<0.005	0.011	34	0.99
Ethylbenzene	0.005	<0.005	0.030	100	2.5
Xylene, total	0.015	<0.015	0.17	520	16
TPH as Gasoline	1.0	<1.0	<1.0	3100	97
Dilution Multiplier ^b		1	1	100	5
TFT surrogate ^c , % recovery		100	89.3	94.7	94.6

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JMM03.UNC03
 Project I.D.: Unocal 4357
 Work Order Number: T303047

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015^a

GTEL Sample Number		03047-4	03047-5	03047-6	03047-7
Client Identification		B-1-40'	B-1-45'	B-1-50'	B-1-55'
Date Sampled		3-3-93	3-3-93	3-3-93	3-3-93
Date Extracted		3-3-93	3-3-93	3-3-93	3-3-93
Date Analyzed		3-3-93	3-3-93	3-3-93	3-3-93
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	0.90	0.007	<0.005	<0.005
Toluene	0.005	70	0.54	0.051	0.056
Ethylbenzene	0.005	31	0.16	0.009	0.013
Xylene, total	0.015	160	1.1	0.091	0.069
TPH as Gasoline	1.0	960	10	<1.0	1.8
Dilution Multiplier ^b		50	1	1	1
TFT surrogate ^c , % recovery		97.7	89.9	89.3	97.2

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JMM03.UNC03
Project I.D.: Unocal 4357
Work Order Number: T303047

ANALYTICAL RESULTS

Volatile Organics in Soil
EPA Methods Modified 8020 and Modified 8015^a

GTEL Sample Number		03047-8	03047-9	03047-10	03047-12
Client Identification		B-1-60'	HB-2-10'	B-3-10'	B-3-20'
Date Sampled		3-3-93	3-3-93	3-3-93	3-3-93
Date Extracted		3-3-93	3-3-93	3-3-93	3-3-93
Date Analyzed		3-3-93	3-3-93	3-3-93	3-3-93
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	0.031	<0.005	<0.005	<0.005
Ethylbenzene	0.005	0.009	0.012	<0.005	<0.005
Xylene, total	0.015	0.063	0.043	<0.015	<0.015
TPH as Gasoline	1.0	<1.0	2.3	<1.0	<1.0
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		98.3	85.3	91.8	94.8

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JMM03.UNC03
 Project I.D.: Unocal 4357
 Work Order Number: T303047

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015^a

GTEL Sample Number		03047-13	03047-14	03047-15	03047-16
Client Identification		B-3-30'	B-3-40'	B-1-65'	B-1-70'
Date Sampled		3-3-93	3-3-93	3-4-93	3-4-93
Date Extracted		3-3-93	3-3-93	3-4-93	3-4-93
Date Analyzed		3-3-93	3-3-93	3-4-93	3-4-93
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	0.006
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	0.035
TPH as Gasoline	1.0	<1.0	<1.0	<1.0	<1.0
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		89.2	90.4	101	101

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JMM03.UNC03
 Project I.D.: Unocal 4357
 Work Order Number: T303047

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015^a

GTEL Sample Number		03047-17	03047-20	03047-22	03047-23
Client Identification		B-1-75'	B-1-90'	B-2-15'	B-2-20'
Date Sampled		3-4-93	3-4-93	3-4-93	3-4-93
Date Extracted		3-4-93	3-4-93	3-5-93	3-4-93
Date Analyzed		3-4-93	3-4-93	3-5-93	3-4-93
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	0.047	0.19
Toluene	0.005	0.005	<0.005	0.019	0.006
Ethylbenzene	0.005	0.005	<0.005	0.016	<0.005
Xylene, total	0.015	0.030	0.019	0.052	0.087
TPH as Gasoline	1.0	<1.0	<1.0	8.0	<1.0
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		100	101	98.0	110

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JMM03.UNC03
 Project I.D.: Unocal 4357
 Work Order Number: T303047

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015a

GTEL Sample Number		03047-25	03047-26	03047-27	03047-28
Client Identification		SB-1-15'	SB-1-20'	SB-1-30'	SB-1-40'
Date Sampled		3-5-93	3-5-93	3-5-93	3-5-93
Date Extracted		3-5-93	3-5-93	3-5-93	3-5-93
Date Analyzed		3-5-93	3-5-93	3-5-93	3-5-93
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	<0.015
TPH as Gasoline	1.0	<1.0	<1.0	<1.0	<1.0
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		97.0	108	99.0	100

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JMM03.UNC03
 Project I.D.: Unocal 4357
 Work Order Number: T303047

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015^a

GTEL Sample Number		03047-29	03047-31	03047-32	03047-33
Client Identification		SB-1-45'	SB-2-15'	SB-2-20'	SB-2-30'
Date Sampled		3-5-93	3-5-93	3-5-93	3-5-93
Date Extracted		3-5-93	3-5-93	3-5-93	3-5-93
Date Analyzed		3-5-93	3-5-93	3-5-93	3-5-93
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	<0.015
TPH as Gasoline	1.0	<1.0	<1.0	<1.0	<1.0
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		98.7	98.2	96.3	99.4

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JMM03.UNC03
 Project I.D.: Unocal 4357
 Work Order Number: T303047

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015a

GTEL Sample Number		03047-34	03047-35	03047-36	03047-37
Client Identification		SB-2-40'	HB-3-10'	HB-4-10'	SB-3-15'
Date Sampled		3-5-93	3-5-93	3-5-93	3-5-93
Date Extracted		3-5-93	3-5-93	3-5-93	3-5-93
Date Analyzed		3-5-93	3-5-93	3-5-93	3-5-93
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	<0.015
TPH as Gasoline	1.0	<1.0	<1.0	<1.0	<1.0
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		100	97.2	102	97.5

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JMM03.UNC03
 Project I.D.: Unocal 4357
 Work Order Number: T303047

ANALYTICAL RESULTS

Volatile Organics in Soil
 EPA Methods Modified 8020 and Modified 8015a

GTEL Sample Number		03047-38	03047-39	03047-40	03047-42
Client Identification		SB-3-30'	SB-3-40'	SB-3-50'	B-4-20'
Date Sampled		3-5-93	3-5-93	3-5-93	3-5-93
Date Extracted		3-5-93	3-5-93	3-5-93	3-5-93
Date Analyzed		3-5-93	3-5-93	3-5-93	3-5-93
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
Benzene	0.005	<0.005	<0.005	<0.005	<0.005
Toluene	0.005	<0.005	<0.005	<0.005	<0.005
Ethylbenzene	0.005	<0.005	<0.005	<0.005	<0.005
Xylene, total	0.015	<0.015	<0.015	<0.015	<0.015
TPH as Gasoline	1.0	<1.0	<1.0	<1.0	<1.0
Dilution Multiplier ^b		1	1	1	1
TFT surrogate ^c , % recovery		99.8	105	106	100

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification for TPH as gasoline as per California State Water Resources Board LUFT Manual procedures. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- TFT surrogate recovery acceptability limits of 72.8-123% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 1.07 mg/kg.

GTEL Client Number: JMM03.UNC03
 Project I.D.: Unocal 4357
 Work Order Number: T303047

ANALYTICAL RESULTS

Total Petroleum Hydrocarbons as Diesel in Soil
 EPA Method Modified 8015a

GTEL Sample Number		Lab Blank	03047-2	03047-23	
Client Identification		--	B-1-20'	B-2-20'	
Date Sampled		3-8-93	3-3-93	3-4-93	
Date Extracted		3-9-93	3-9-93	3-9-93	
Date Analyzed		3-9-93	3-9-93	3-9-93	
Analyte	Reporting Limit, mg/kg	Concentration, mg/kg			
TPH as diesel	10	<10	<10	<10	
Dilution Multiplier ^b		1	1	1	
o-Terphenyl surrogate ^c , % recovery		100	100	98.7	

- Test Methods for Evaluating Solid Waste, SW-846, Third Edition, Revision 0, US EPA November 1986. Modification as per California State Water Resources Board LUFT Manual protocols. Extraction by EPA Method 3550. Results are calculated on a wet weight basis.
- Indicates the adjustments made for sample dilution.
- o-Terphenyl surrogate recovery acceptability limits of 70-130% are derived from the 99% confidence interval of all samples during the previous quarter. Expected surrogate value is 50 mg/kg.



20000 Mariner Dr., Suite #300
Torrance, CA 90503

213-371-1044
800-727-GTEL

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST 76- 9858

CUSTODY RECORD

Project Manager: *Max Rasouli* Phone #: *(818) 568-6948*
Address: *11208 National Blvd. L.A. CA. 90044* FAX #: *(818) 568-6103*
Project Number: Site location: *11208 National Blvd. L.A. CA. 90044*
Project Name: *11208 # 4357*

I attest that the proper field sampling procedures were used during the collection of these samples. Sampler Name (Print): *Manny Saenz*

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix					Method Preserved					Sampling	
				WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO ₃	H ₂ SO ₄	ICE	NONE	OTHER	DATE
B-1-15'		1A	1	X								X			0834
B-1-20'		2A	1	X								X			0851
B-1-30'		3A	1	X								X			0900
B-1-40'		4A	1	X								X			0912
B-1-45'		5A	1	X								X			1010
B-1-50'		6A	1	X								X			1031
B-1-55'		7A	1	X								X			1038
B-1-60'		8A	1	X								X			1142
HB-2-10'		9A	1	X								X			1636
B-3-10'		10A	1	X								X			1712
B-3-15'		11A	1	X								X			1719

SPECIAL HANDLING

24 HOURS ☒ Mobile Lab. ☒
EXPEDITED 48 Hours ☐
SEVEN DAY ☐
OTHER _____ (#) BUSINESS DAYS
CA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS:

Unusual # 4357
Job No. 290.0170

Lab Use Only

Lot #:

Storage Location

Work Order #:

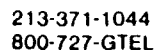
T303047

ANALYSIS REQUEST

<input type="checkbox"/> BTEX 602 <input type="checkbox"/> 8020 <input type="checkbox"/> with MTBE <input type="checkbox"/>	<input type="checkbox"/> BTEX/TPH Gas. 602/8015 <input type="checkbox"/> MTBE <input type="checkbox"/>	<input type="checkbox"/> TPH as <input type="checkbox"/> Gas <input checked="" type="checkbox"/> Diesel <input type="checkbox"/> Jet Fuel	<input type="checkbox"/> Product I.D. by GC (SIMDIS) <input type="checkbox"/>	<input type="checkbox"/> Total Oil & Grease: 413.1 <input type="checkbox"/> 413.2 <input type="checkbox"/> 503A <input type="checkbox"/>	<input type="checkbox"/> Total Petroleum Hydrocarbons: 418.1 <input type="checkbox"/> 503E <input type="checkbox"/>	<input type="checkbox"/> EPA 601 <input type="checkbox"/> 8010 <input type="checkbox"/> DCA only <input type="checkbox"/>	<input type="checkbox"/> EPA 602 <input type="checkbox"/> 8020 <input type="checkbox"/>	<input type="checkbox"/> EPA 608 <input type="checkbox"/> 8080 <input type="checkbox"/> PCBs only <input type="checkbox"/>	<input type="checkbox"/> EPA 610 <input type="checkbox"/> 8310 <input type="checkbox"/>	<input type="checkbox"/> EPA 624 <input type="checkbox"/> 8240 <input type="checkbox"/>	<input type="checkbox"/> EPA 625 <input type="checkbox"/> 8270 <input type="checkbox"/>	<input type="checkbox"/> EPA 625 <input type="checkbox"/> 8270 <input type="checkbox"/>	<input type="checkbox"/> NBS +15 <input type="checkbox"/>	<input type="checkbox"/> NBS +25 <input type="checkbox"/>	<input type="checkbox"/> EPTOX: Metals <input type="checkbox"/> Pesticides <input type="checkbox"/> Herbicides <input type="checkbox"/>	<input type="checkbox"/> TCLP Metals <input type="checkbox"/> VOA <input type="checkbox"/> Semi VOA <input type="checkbox"/>	<input type="checkbox"/> EPA Priority Pollutant Metals <input type="checkbox"/> HSL <input type="checkbox"/>	<input type="checkbox"/> LEAD 7420 <input type="checkbox"/> 7421 <input type="checkbox"/> 239.2 <input type="checkbox"/> 6010 <input type="checkbox"/> Org. Lead <input type="checkbox"/>	<input type="checkbox"/> CAM Metals <input type="checkbox"/> STLC <input type="checkbox"/> TTLC <input type="checkbox"/>	<input type="checkbox"/> Corrosivity <input type="checkbox"/> Flashpoint <input type="checkbox"/> Reactivity <input type="checkbox"/>
---	--	---	---	--	---	---	---	--	---	---	---	---	---	---	---	--	--	---	--	---

HOLD

Relinquished by Sampler:	Date	Time	Received by:	Received by Laboratory:
<i>Manny Saenz</i>	3/3/93	1949	<i>Richard T. Castillo</i>	<i>Way bill #</i>
Relinquished by:	Date	Time	Received by:	
<i>Richard T. Castillo</i>	3/4/93	1808		
Relinquished by:	Date	Time		
	3/4/93	1808		



Max Rasouli

Site location: 11200 N. H. 11200

Montgomery Watson

Unocul BSH 4357

Project Name:

Sampler Name (Print):

Manny Saenz

CUSTODY RECORD

76- 9859

ANALYSIS REQUEST

Relinquished by Sender: <i>[Signature]</i>	Date 3/13/93	Time 1949	Received by: <i>Michael J. Castle</i>
Relinquished by: <i>Michael J. Castle</i>	Date 3/14/93	Time 1807	Received by: [Blank]
Relinquished by: [Blank]	Date 3/4/93	Time 1808	Received by Laboratory: <i>[Signature]</i> Way bill #

24 HOURS ☒ Mobile Lab. ☐ Ser.

EXPEDITED 48 Hours ☐

SEVEN DAY ☐

OTHER _____ (#) BUSINESS DAYS

QA/QC CLP Level ☐ Blue Level ☐FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS
(Specify)

REMARKS:

Unrec'd ss # 4357

Job. No. 290. 0170

Lab Use Only

Lot #:

Storage Location

Work Order #:

T30304

213-371-1044
800-727-GTEL

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

76- 9857

CUSTODY RECORD

Project Manager:

Phone #: (818) 568-1448

Address:

FAX #: 181 568.6103

Project Number:

Project Name:

I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler Name (Print):

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix					Method Preserved					Sampling	
				WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO ₃	H ₂ SO ₄	ICE	NONE	OTHER	DATE
BZ-65			1	X							X			8/4/93	11:55
BZ-70			1	X							X			1/4/93	11:15
BZ-75			1	X							X			2/4/93	11:30
BZ-80			1	X							X			3/4/93	11:30
BZ-85			1	X							X			1/4/93	12:00
BZ-90			1	X							X			2/4/93	12:10
BZ-90	BZ-10		1	X							X			3/4/93	8:22
BZ-115	BZ-15		1	X							X			3/4/93	8:14
BZ-20	BZ-20		1	X							X			3/4/93	9:17

SPECIAL HANDLING

24 HOURS ☒ *Mobile Lab. Ser. I*
EXPEDITED 48 Hours ☐
SEVEN DAY ☐
OTHER _____ (#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS
(Specify)

REMARKS:

Lab Use Only

Lot #:

Storage Location

Work Order #:

Re/inquired by Sampler:

Relinquished by:

Relinquished by

Received by _____

Time

Date _____

Re/inquired by Sampler:

Received by

Time

Date: 7/1/

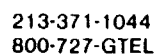
Relinquished by:

517

Date _____
Page _____

Relinquished by

Way bill #



76- 9864

Way bill



20000 Mariner Dr., Suite #300
Torrance, CA 90503

213-371-1044
800-727-GTEL

CHAIN-OF-CUSTODY RECORD AND ANALYSIS REQUEST

76- 9863

CUSTODY RECORD

ANALYSIS REQUEST

Project Manager:

Max Rasouli

Phone #: *(618) 568-6446*

FAX #: *(618) 568-6103*

Address:

Montgomery Watson

Site location:

11280 National Blvd. Unocal # 4357

Project Number:

Project Name:

I attest that the proper field sampling procedures were used during the collection of these samples.

Sampler Name (Print):

Manny Scaz

Field Sample ID	Source of Sample	GTEL Lab # (Lab use only)	# CONTAINERS	Matrix				Method Preserved				Sampling			
				WATER	SOIL	AIR	SLUDGE	OTHER	HCl	HNO ₃	H ₂ SO ₄	ICE	NONE	OTHER	DATE
4B-3-16'			1	X							X			3/6/93	
4L-4-10'			1	X							X			↓	
SB-3-16'			1	X							X				
SB-3-30'			1	X							X				
SA-3-16'			1	X							X				
SB-3-50'			1	X							X				
B-4-10'			1	X							X			↓	
B-4-20'			1	X							X				

<input type="checkbox"/> with MTBE	<input type="checkbox"/> BTEX 602	<input type="checkbox"/> 8020	<input type="checkbox"/> BTEX/TPH Gas	<input type="checkbox"/> 602/8015	<input type="checkbox"/> 8020/8015	<input type="checkbox"/> MTBE	<input type="checkbox"/> TPH as	<input type="checkbox"/> Gas	<input type="checkbox"/> Diesel	<input type="checkbox"/> Jet Fuel	<input type="checkbox"/> Product I.D. by GC (SIMDIS)	<input type="checkbox"/> Total Oil & Grease	<input type="checkbox"/> 413.1	<input type="checkbox"/> 413.2	<input type="checkbox"/> 503A	<input type="checkbox"/> Total Petroleum Hydrocarbons	<input type="checkbox"/> 418.1	<input type="checkbox"/> 503E	<input type="checkbox"/> EPA 601	<input type="checkbox"/> 8010	<input type="checkbox"/> DCA only	<input type="checkbox"/> EPA 602	<input type="checkbox"/> 8020	<input type="checkbox"/> EPA 608	<input type="checkbox"/> 8080	<input type="checkbox"/> PCBs only	<input type="checkbox"/> EPA 610	<input type="checkbox"/> 8310	<input type="checkbox"/> EPA 624	<input type="checkbox"/> 8240	<input type="checkbox"/> NBS +15	<input type="checkbox"/> EPA 625	<input type="checkbox"/> 8270	<input type="checkbox"/> NBS +25	<input type="checkbox"/> EPTOX: Metals	<input type="checkbox"/> Pesticides	<input type="checkbox"/> Herbicides	<input type="checkbox"/> TCLP Metals	<input type="checkbox"/> VOA	<input type="checkbox"/> Semi VOA	<input type="checkbox"/> EPA Priority Pollutant Metals	<input type="checkbox"/> HSL	<input type="checkbox"/> LEAD 7420	<input type="checkbox"/> 7421	<input type="checkbox"/> 239.2	<input type="checkbox"/> 6010	<input type="checkbox"/> Org. Lead	<input type="checkbox"/> CAM Metals	<input type="checkbox"/> STLC	<input type="checkbox"/> TLIC	<input type="checkbox"/> Corrosivity	<input type="checkbox"/> Flashpoint	<input type="checkbox"/> Reactivity
------------------------------------	-----------------------------------	-------------------------------	---------------------------------------	-----------------------------------	------------------------------------	-------------------------------	---------------------------------	------------------------------	---------------------------------	-----------------------------------	--	---	--------------------------------	--------------------------------	-------------------------------	---	--------------------------------	-------------------------------	----------------------------------	-------------------------------	-----------------------------------	----------------------------------	-------------------------------	----------------------------------	-------------------------------	------------------------------------	----------------------------------	-------------------------------	----------------------------------	-------------------------------	----------------------------------	----------------------------------	-------------------------------	----------------------------------	--	-------------------------------------	-------------------------------------	--------------------------------------	------------------------------	-----------------------------------	--	------------------------------	------------------------------------	-------------------------------	--------------------------------	-------------------------------	------------------------------------	-------------------------------------	-------------------------------	-------------------------------	--------------------------------------	-------------------------------------	-------------------------------------

SPECIAL HANDLING

24 HOURS ☒ Mobile Lab. Serv. II
EXPEDITED 48 Hours ☐
SEVEN DAY ☐
OTHER _____ (#) BUSINESS DAYS
QA/QC CLP Level ☐ Blue Level ☐
FAX ☐

SPECIAL DETECTION LIMITS (Specify)

SPECIAL REPORTING REQUIREMENTS (Specify)

REMARKS:

Unocal SS# 4357
Job. No. 290.0170

Lab Use Only

Lot #:

Storage Location

Work Order #:

T303047

Received by:

Time

Date

Relinquished by:

Received by:

Time

Date

Relinquished by:

Received by Laboratory:

Time

Date

Relinquished by:

Way bill #

Way bill #

Time

Date

Relinquished by:

**SMITH-EMERY COMPANY***The Full Service Independent Testing Laboratory. Established 1904*

781 East Washington Boulevard
P.O. Box 880550, Hunter's Point Shipyard Bldg 114
5427 East La Palma Avenue

• Los Angeles, California 90021
• San Francisco, California 94188
• Anaheim, California 92807

• (213) 749-3411
• (415) 330-3000
• (714) 693-1026

• Fax: (213) 746-7228
• Fax: (415) 822-5864
• Fax: (714) 693-1034

Montgomery Watson, Inc.**04/06/93**

File# 72402
301 North lake Ave.
Pasadena, CA 91101

Attn: Majid Rasouli
818/568/6948

RECEIVED
APR - 7 1993
AIR TOXICS
DEPARTMENT
JAMES MONTGOMERY
CONSULTING ENGINEERS INC.

Unocal Service Station
#4357, Chain of Custody

Sample #: 3064152301
Received: 03/05/93
Type: Soil

Collector: Client
Sampling Date & Time: 03/03/93, 0912
Method: Submitted By Client

I.D.: b - 1 - 40'

=====CONSTITUENT=====	====METHOD=====	==RESULT==	===UNIT===
pH	EPA 9045	7.9	units
Porosity	API RP-40	34.3	%
Bulk Density	API RP-40	1.73	g/cc
Hydraulic Conductivity	EPA 9100	7.36x10 ⁻⁶	cm/sec
Water Saturation, (%)	DEAN-STARK	91.6	%
Contaminant Saturation, (%)	DEAN-STARK	<0.1	%
Air Permeability, Native	API RP-40	13.5	md
Particle Size		See Attachment	
Nitrogen		See Attachment	
Phosphate		See Attachment	
Bacterial Plate Count		See Attachment	
Total Organic Carbons	EPA 415.1	See Attachment	

Respectfully Submitted,


Shahid Noori, Manager Chemical Lab

**SMITH-EMERY COMPANY***The Full Service Independent Testing Laboratory, Established 1904*781 East Washington Boulevard
P.O. Box 880550, Hunter's Point Shipyard Bldg. 114
5427 East La Palma Avenue• Los Angeles, California 90021
• San Francisco, California 94188
• Anaheim, California 92807• (213) 749-3411
• (415) 330-3000
• (714) 693-1026• Fax: (213) 746-7228
• Fax: (415) 822-5864
• Fax: (714) 693-1034MONTGOMERY WATSON, INC.
FILE # 72402
JOB # UNOCAL SERVICE STATION #4357DATE: 3/11/93
SAMPLE #: 3064152301
SAMPLE ID.: B-1-40'**SIEVE ANALYSIS - DRY METHOD**

OPENING INCHES	OPENING MILLIMETERS	PHI OF SCREEN	U.S. NUMBER	SAMPLE WEIGHT	RETAINED WEIGHT %	CUMULATIVE WEIGHT %
0.1873	4.757	-2.25	4	0.19	0.71	0.71
0.1114	2.828	-1.50	7	0.53	1.96	2.67
0.0787	2.000	-1.00	10	0.20	0.76	3.43
0.0557	1.414	-0.50	14	0.18	0.65	4.08
0.0394	1.000	0.00	18	0.30	1.13	5.21
0.0278	0.707	0.50	25	0.42	1.55	6.76
0.0197	0.500	1.00	35	0.93	3.45	10.21
0.0139	0.354	1.50	45	1.40	5.19	15.40
0.0098	0.250	2.00	60	2.46	9.14	24.54
0.0070	0.177	2.50	80	3.49	12.97	37.51
0.0049	0.125	3.00	120	3.91	14.51	52.03
0.0035	0.088	3.50	170	3.13	11.64	63.67
0.0025	0.063	4.00	230	3.03	11.24	74.91
0.0017	0.044	4.50	325	2.19	8.13	83.04
0.0013	0.032	5.16	450	1.14	4.22	87.26
			PAN	3.43	12.74	100.00
TOTALS				26.92	100.00	100.00

PERCENTILES:

0.0424	1.077	-0.09	5.00
0.0202	0.513	0.97	10.00
0.0136	0.347	1.53	16.00
0.0097	0.247	2.02	25.00
0.0052	0.132	2.93	50.00
0.0025	0.063	4.01	75.00
0.0016	0.041	4.65	84.00
			90.00
			95.00

MEASURE	TRASK (mm)	INMAN (phi)	FOLK AND WARD (phi)	GRAIN SIZE DESCRIPTION (WENTWORTH SCALE)
MEDIAN	0.1323	2.9302	2.9302	FINE SAND
MEAN	0.1551	3.0914	3.0377	VERY FINE SAND
SORTING	0.2538	1.5584		
SKEWNESS	0.8882	0.1035		
KURTOSIS				

ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AUTHORIZATION FOR PUBLICATION OF OUR REPORT, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING THEM IS RESERVED PENDING OUR WRITTEN APPROVAL AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES.



SMITH-EMERY COMPANY

The Full Service Independent Testing Laboratory, Established 1904

781 East Washington Boulevard
P.O. Box 880550, Hunter's Point Shipyard Bldg. 114
5427 East La Palma Avenue

• Los Angeles, California 90021
• San Francisco, California 94188
• Anaheim, California 92807

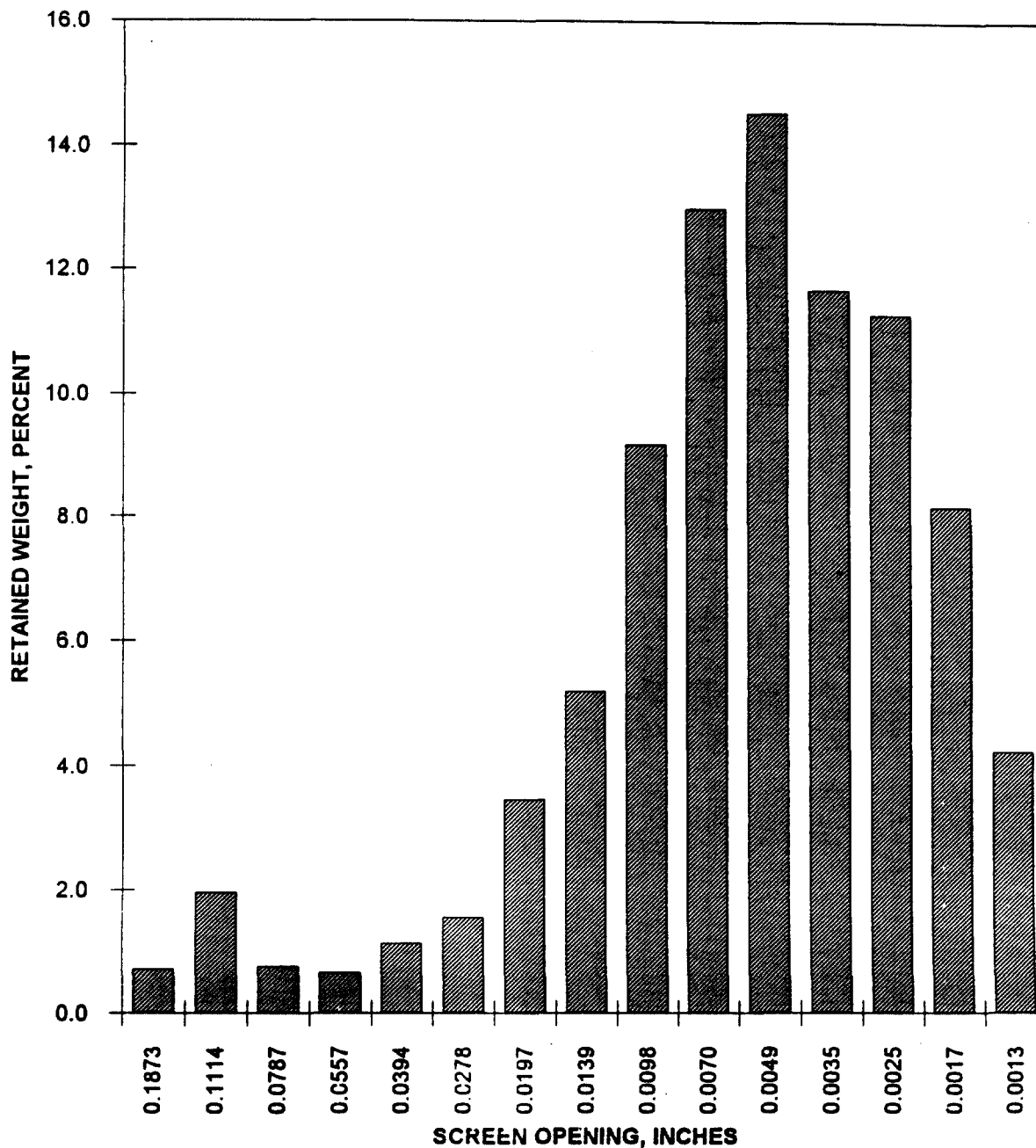
• (213) 749-3411
• (415) 330-3000
• (714) 693-1026

• Fax: (213) 746-7228
• Fax: (415) 822-5864
• Fax: (714) 693-1034

MONTGOMERY WATSON, INC.
FILE # 72402
JOB # UNOCAL SERVICE STATION #4357

DATE: 3/11/93
SAMPLE #: 3064152301
SAMPLE ID.: B-1-40'

SIEVE ANALYSIS - DRY METHOD



ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AUTHORIZATION FOR PUBLICATION OF OUR REPORT, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING THEM IS RESERVED PENDING OUR WRITTEN APPROVAL AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES.



SMITH-EMERY COMPANY

The Full Service Independent Testing Laboratory, Established 1904

781 East Washington Boulevard
P.O. Box 880550, Hunter's Point Shipyard Bldg. 114
5427 East La Palma Avenue

• Los Angeles, California 90021
• San Francisco, California 94188
• Anaheim, California 92807

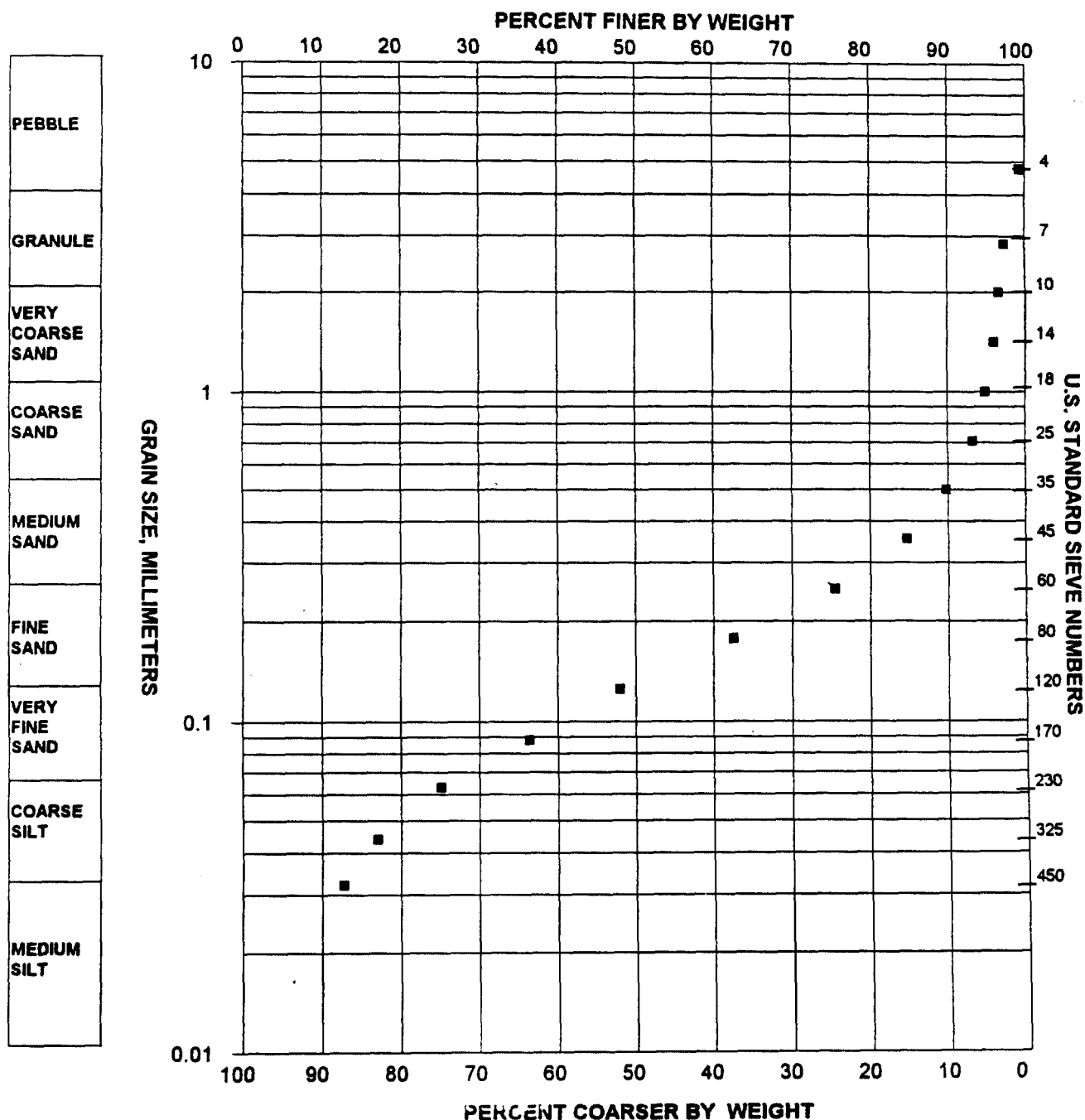
• (213) 749-3411
• (415) 330-3000
• (714) 693-1026

• Fax: (213) 746-7228
• Fax: (415) 822-5864
• Fax: (714) 693-1034

MONTGOMERY WATSON, INC.
FILE # 72402
JOB # UNOCAL SERVICE STATION #4357

DATE: 3/11/93
SAMPLE #: 3064152301
SAMPLE ID.: B-1-40'

SIEVE ANALYSIS - DRY METHOD



ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AUTHORIZATION FOR PUBLICATION OF OUR REPORT, CONCLUSIONS, OR EXTRACTS FROM OR REGARDING THEM IS RESERVED PENDING OUR WRITTEN APPROVAL AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES.



BioScreen Testing Services, Inc.
Microbiology • Chemistry • Environmental • Asbestos

ANALYTICAL REPORT

SMITH-EMERY COMPANY
781 East Washington Blvd.
Los Angeles, CA 90021

ATTN: John Uranga

REPORT DATE: 03/31/93
ACCESSION #: 7342
PROJECT #: 0703-1
SAMPLE DATE RECEIVED: 03/11/93

SAMPLE:

<u>ACC #:</u>	<u>SAMPLES:</u>	<u>LOT #:</u>
7342	Soil	3064152302

TEST(S)
PERFORMED:

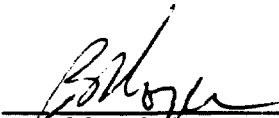
	<u>METHOD</u>	<u>DETECTION LEVEL</u>
Heterotrophic Plate Count	M223	
Phosphate, ppm	EPA 300.0	5 mg/kg
Nitrogen as Ammonia, ppm	EPA 350.3	10 mg/kg

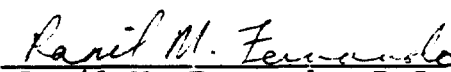
RESULTS:

	<u>ACC #: 7342</u>
Heterotrophic Plate Count	3.0 x 10 ³ CFU/g*
Phosphate	ND
Nitrogen	ND

ND = Non Detected

*CFU/g = Colony Forming Units/grams


Bradford L. Roep
Laboratory Director


Ranil M. Fernando, B.S.
Operations Supervisor

March 22, 1993

SMITH-EMERY COMPANY
781 E Washington Blvd
Los Angeles, CA 90021

Attn: Rick Young

JOB NO. 23509

WCAS

**WEST COAST
ANALYTICAL
SERVICE, INC.**

ANALYTICAL CHEMISTS

D

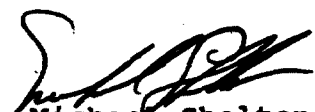
LABORATORY REPORT


Samples Received: One (1) Soil
Date Received: 3-10-93
Purchase Order No: 14052
Lab No.: 3064152303

The sample was analyzed as follows:

<u>Samples Analyzed</u>	<u>Analysis</u>	<u>Results</u>
One (1) soil	Total Organic Carbon by Walkly-Black Method	Table 1

Page 1 of 2


Michael Shelton
Technical Director


D. J. Northington, Ph.D.
President

This report is to be reproduced in its entirety.

9840 Alburdis Avenue • Santa Fe Springs, California 90670 • 310/948-2225 • FAX 310/948-5350

WEST COAST ANALYTICAL SERVICE, INC.

SMITH-EMERY COMPANY
Mr. Rick Young

Job # 23509
March 22, 1993

LABORATORY REPORT

Table 1

Total Organic Carbon by Walkly-Black Method

<u>Sample ID</u>	<u>Parts Per Million (mg O2/Kg)</u>
3064152303	770
Detection Limit:	20
Date Analyzed:	03/18/93

Matrix Spike/Matrix Spike Duplicate Quality Control Summary

Sample: 3064152303

Analyte	Sample Result	Amount Spiked	MS Result	% Rec MS	MSD Result	% Rec MSD	RPD
TOC	770	58.6	697	N/A	643	N/A	8

N/A - Not Applicable. Sample concentration exceeds spike value.

QC Limits

Analyte	Warning	RPD Control	% Recovery Control
TOC	15	25	50 - 150

Abbreviation Summary

General Reporting Abbreviations:

- B** Blank - Indicates that the compound was found in both the sample and the blank. The sample value is reported without blank subtraction. If the sample value is less than 10X the blank value times the sample dilution factor, the compound may be present as a laboratory contaminant.
- D** Indicates that the sample was diluted, and consequently the surrogates were too dilute to accurately measure.
- DL** Detection Limit - Is the minimum value which we believe can be detected in the sample with a high degree of confidence, taking into account dilution factors and interferences. The reported detection limits are equal to or greater than Method Detection Limits (MDL) to allow for day to day and instrument to instrument variations in sensitivity.
- J** Indicates that the value is an estimate.
- ND** Not Detected - Indicates that the compound was not found in the sample at or above the detection limit.
- ppm** parts per million (billion) in liquids is usually equivalent to mg/l (ug/l), or in solids to mg/kg (ug/kg). In the gas phase it is equivalent to ul/l (ul/m³).
- TR** Trace - Indicates that the compound was observed at a value less than our normal reported Detection Limit (DL), but we feel its presence may be important to you. These values are subject to large errors and low degrees of confidence.
- | | | | |
|-------------|--------------|---------------|---------|
| kg kilogram | mg milligram | l liter | m meter |
| g gram | ug microgram | ul microliter | |

QC Abbreviations:

- Control** Control Limits are determined from historical data for a QC parameter. The test value must be within this acceptable range for the test to be considered in control. Usually this range corresponds to the 99% confidence interval for the historical data.
- % Error** Percent Error - This is a measure of accuracy based on the analysis of a Laboratory Control Standard (LCS). An LCS is a reference sample of known value such as an NIST Standard Reference Material (SRM). The % Error is expressed in percent as the difference between the known value and the experimental value, divided by the known value. The LCS may simply be a solution based standard which confirms calibration (ICV or CCV - initial or continuing calibration verification), or it may be a reference sample taken through preparation and analysis.

SMITH-EMERY COMPANY
The Full Service Independent Testing Laboratory, Established 1904

781 East Washington Boulevard
P.O. Box 880550, Hunter's Point Shipyard Bldg. 114
5427 East La Palma Avenue

- Los Angeles, California 90021
- San Francisco, California 94188
- Anaheim, California 92807

- (213) 749-3411
- (415) 330-3000
- (714) 693-1026

- Fax: (213) 745-6372
- Fax: (415) 822-5864
- Fax: (714) 693-1034

CHAIN OF CUSTODY AND ANALYSIS REQUEST

DATE: 3/4/93 PAGE 1 OF 7
FILE NO. 72402 LAB NO. 306415230

FILE NO. 72402 LAB NO. 306415230

CLIENT NAME:

UNOCAL / Montgomery, Watson

ANALYSES REQUESTED:

REMARKS:

PROJECT NAME:

UNOCAL Service Stations

PROJECT NO.

P.O. NO.

ADDRESS:

301 ~~shrub~~^{mm s} Lake Ave, Pasadena, CA, 9/1/01

PROJECT MANAGER:

GER: Majid Kasoufi

PHONE #: 818-568-6448 FAX #: 818-568-6103

SAMPLER NAME:

Manuel Sane

(Signature)

Лаборатория

TAT (Analytical Turn Around Time)

0 - Same Day, 1 - 24 Hour, 2 - 48 Hour, (Etc.)

CONTAINER TYPES: B - Brass, G - Glass, P - Plastic, V - Voa Vial, O - Other:

[illegible]

Retino. Jished By. (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date _____

Time

Enlanguished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Data

Turner

Polished By: (Signature and Printed Name)

Received By: (Signature and Printed Name)

Date: _____

Time

SPECIAL INSTRUCTIONS:

SAMPLE DISPOSITION:

1. Samples returned to client?	YES	NO
--------------------------------	-----	----

2. Samples will not be stored over 30 days, unless additional storage time is requested.

3. Storage time requested: _____ days

By _____ Date _____

DISTRIBUTION: WHITE, YELLOW, PINK TO SECO - GOLD TO CLIENT

APPENDIC D

NON-HAZARDOUS WASTE DATA FORMS

NON-HAZARDOUS WASTE DATA FORM

NO. 3710

TO BE COMPLETED BY GENERATOR

SS#: 4357--11280 National Blvd., Los Angeles, CA
 NAME Unocal Hazardous Materials Analyst
 ADDRESS 911 Wilshire Blvd., Suite 1010
 CITY, STATE, ZIP Los Angeles, CA 90017

EPA
I.D.
NO.

PROFILE
NO.

PHONE NO. 213 977-6596

CONTAINERS: No. 001 VOLUME 150 G WEIGHT _____

TYPE: ☒ TANK TRUCK ☐ DUMP TRUCK ☐ DRUMS ☐ CARTONS ☐ OTHER _____

WASTE DESCRIPTION: Non-Hazardous Water GENERATING PROCESS: Auger Decon
 COMPONENTS OF WASTE PPM % COMPONENTS OF WASTE PPM %

1. Water _____ 99-100% 5. _____

2. TPH _____ 0-.1% 6. _____

3. _____ 7. _____

4. _____ 8. _____

PROPERTIES: pH 5.1-9 ☐ SOLID ☒ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____

HANDLING INSTRUCTIONS: Wear appropriate safety gear when handling.

THE GENERATOR CERTIFIES THAT THE
WASTE AS DESCRIBED IS 100%
NON-HAZARDOUS.

TYPED OR PRINTED FULL NAME & SIGNATURE

NAME Pacific Environmental Management Corporation

EPA
I.D.
NO.

ADDRESS 2045 E. Carson Street

SERVICE ORDER NO. 57159

CITY, STATE, ZIP Carson, CA 90810

PICK UP DATE _____

PHONE NO. 310-513-2100

TRUCK, UNIT, I.D. NO. 1427 4641309

TYPED OR PRINTED FULL NAME & SIGNATURE

NAME Crosby & Overton

EPA
I.D.
NO.

ADDRESS 1610 W. 17th Street

☐ LANDFILL ☒ OTHER _____

CITY, STATE, ZIP Long Beach, CA 90813

PHONE NO. 310-432-5445

TYPED OR PRINTED FULL NAME & SIGNATURE

OLD/NEW	L	A	TONS
	S	B	
RT/CO			HW/
			NONE

DISCREPANCY

Soil Recycling Certificate

TPS Technologies Inc. does hereby certify
that 6.78 tons of petroleum - contaminated soil
received from

Unocal Corporation
Unical #4357
Pacific Environmental Management - Consultants
22010 South Wilmington
Suite 200
Carson, California

Under Manifest/authorization number 03 - 00440
has been properly recycled to approved regulatory standards
at our Soil Recycling Facility in Adelanto, California



Dated this 18th day of May, 19 93

Sworn and Attested by:
TPS Technologies Inc.

By: Mary I. Scott

TPS Technologies Soil Recycling

Clean Hazardous Soils

Date of Shipment: 5/10/97	Responsible for Payment: Facility	Transporter Truck #: 279	Facility #: 83	Given by TPA: 66-0000	Land #: 17																																																																							
Generator's Name and Billing Address: UNOCAL Corporation 17700 Castleton Street, Ste. 300 City of Industry, CA		Generator's Phone #: (626) 962-8001 Person to Contact: Darren Bartlett FAX #: (626) 246-8004		Generator's E-mail: unocal@unocal.com Customer Account Number: 17																																																																								
Consultant's Name and Billing Address: TPS Technologies Inc. 12328 Hibiscus Avenue Adelanto, California 92301		Consultant's Phone #: (800) 862-8001 Person to Contact: Darren Bartlett FAX #: (819) 246-8004		Consultant's E-mail: tpstps@tpstechnologies.com Customer Account Number: 17																																																																								
Generation Site (Transport from) (name & address): UNOCAL 88th 4300 11200 National Blvd. Los Angeles, CA		Site Phone #: (800) 862-8001 Person to Contact: Darren Bartlett FAX #: (819) 246-8004		Site E-mail: unocal@unocal.com Customer Account Number: 17																																																																								
Designated Facility (Transport to) (name & address): TPS Technologies Inc. 12328 Hibiscus Avenue Adelanto, California 92301		Facility Phone #: (800) 862-8001 Person to Contact: Darren Bartlett FAX #: (819) 246-8004		Facility Permit Number: 3117 Facility E-mail: tpstps@tpstechnologies.com																																																																								
Transporter's Name and Billing Address: Pacific Env. Mgmt. Corporation 22010 S. Wilmington Carson, CA 90745		Transporter's Phone #: (310) 876-1000 Person to Contact: Darren Bartlett FAX #: (310) 876-1000		Transporter's E-mail: tpstps@tpstechnologies.com Customer Account Number: 17																																																																								
Description of Soil: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Sand <input type="checkbox"/></td> <td>Organic <input type="checkbox"/></td> <td>0-10% <input type="checkbox"/></td> <td>Gas <input type="checkbox"/></td> <td rowspan="3" style="text-align: center; vertical-align: middle;"> 26 30 </td> <td rowspan="3" style="text-align: center; vertical-align: middle;"> SOIL NON HAZ SOIL </td> <td rowspan="3" style="text-align: center; vertical-align: middle;"> 10,400 P. </td> <td rowspan="3" style="text-align: center; vertical-align: middle;"> 3117 </td> <td rowspan="3" style="text-align: center; vertical-align: middle;"> 17551 </td> </tr> <tr> <td>Clay <input checked="" type="checkbox"/></td> <td>Other <input type="checkbox"/></td> <td>10-20% <input type="checkbox"/></td> <td>Diesel <input type="checkbox"/></td> </tr> <tr> <td></td> <td></td> <td>20% - over <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> </tr> <tr> <td>Sand <input type="checkbox"/></td> <td>Organic <input type="checkbox"/></td> <td>0-10% <input type="checkbox"/></td> <td>Gas <input type="checkbox"/></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Clay <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> <td>10-20% <input type="checkbox"/></td> <td>Diesel <input type="checkbox"/></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>20% - over <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Sand <input type="checkbox"/></td> <td>Organic <input type="checkbox"/></td> <td>0-10% <input type="checkbox"/></td> <td>Gas <input type="checkbox"/></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Clay <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> <td>10-20% <input type="checkbox"/></td> <td>Diesel <input type="checkbox"/></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td>20% - over <input type="checkbox"/></td> <td>Other <input type="checkbox"/></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						Sand <input type="checkbox"/>	Organic <input type="checkbox"/>	0-10% <input type="checkbox"/>	Gas <input type="checkbox"/>	26 30	SOIL NON HAZ SOIL	10,400 P.	3117	17551	Clay <input checked="" type="checkbox"/>	Other <input type="checkbox"/>	10-20% <input type="checkbox"/>	Diesel <input type="checkbox"/>			20% - over <input type="checkbox"/>	Other <input type="checkbox"/>	Sand <input type="checkbox"/>	Organic <input type="checkbox"/>	0-10% <input type="checkbox"/>	Gas <input type="checkbox"/>						Clay <input type="checkbox"/>	Other <input type="checkbox"/>	10-20% <input type="checkbox"/>	Diesel <input type="checkbox"/>								20% - over <input type="checkbox"/>	Other <input type="checkbox"/>						Sand <input type="checkbox"/>	Organic <input type="checkbox"/>	0-10% <input type="checkbox"/>	Gas <input type="checkbox"/>						Clay <input type="checkbox"/>	Other <input type="checkbox"/>	10-20% <input type="checkbox"/>	Diesel <input type="checkbox"/>								20% - over <input type="checkbox"/>	Other <input type="checkbox"/>					
Sand <input type="checkbox"/>	Organic <input type="checkbox"/>	0-10% <input type="checkbox"/>	Gas <input type="checkbox"/>	26 30	SOIL NON HAZ SOIL	10,400 P.	3117	17551																																																																				
Clay <input checked="" type="checkbox"/>	Other <input type="checkbox"/>	10-20% <input type="checkbox"/>	Diesel <input type="checkbox"/>																																																																									
		20% - over <input type="checkbox"/>	Other <input type="checkbox"/>																																																																									
Sand <input type="checkbox"/>	Organic <input type="checkbox"/>	0-10% <input type="checkbox"/>	Gas <input type="checkbox"/>																																																																									
Clay <input type="checkbox"/>	Other <input type="checkbox"/>	10-20% <input type="checkbox"/>	Diesel <input type="checkbox"/>																																																																									
		20% - over <input type="checkbox"/>	Other <input type="checkbox"/>																																																																									
Sand <input type="checkbox"/>	Organic <input type="checkbox"/>	0-10% <input type="checkbox"/>	Gas <input type="checkbox"/>																																																																									
Clay <input type="checkbox"/>	Other <input type="checkbox"/>	10-20% <input type="checkbox"/>	Diesel <input type="checkbox"/>																																																																									
		20% - over <input type="checkbox"/>	Other <input type="checkbox"/>																																																																									
List any exception to items listed above:																																																																												
Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above.																																																																												
Print or Type Name: Generator <input checked="" type="checkbox"/> Consultant <input type="checkbox"/>		Signature and date: [Signature]		Month: 5 Day: 10 Year: 97																																																																								
Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received.																																																																												
Print or Type Name: Darren Bartlett		Signature and date: [Signature]		Month: 4 Day: 21 Year: 97																																																																								
Discrepancies:																																																																												
Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:																																																																												
Print or Type Name: Darren V. Bartlett		Signature and date: [Signature]		Month: 5 Day: 10 Year: 97																																																																								

Please print or type.

GENERATOR / CONSULTANT'S COPY

**UNOCAL
Corporate Environmental
Remediation and Technology**

**Feasibility Study
for Service Station #4357**

June 1994



MONTGOMERY WATSON

FEASIBILITY STUDY REPORT
for
UNOCAL SERVICE STATION #4357
11280 National Boulevard
Los Angeles, California

Prepared For:
UNOCAL CORPORATE ENVIRONMENTAL REMEDIATION
& TECHNOLOGY
376 South Valencia Avenue
Brea, California 92622

Prepared By:
MONTGOMERY WATSON
301 North Lake Avenue, Suite 600
Pasadena, California 91101

JUNE 1994

TABLE OF CONTENTS

<u>Description</u>	<u>Page No.</u>
INTRODUCTION	1
SITE DESCRIPTION	1
GEOLOGY AND HYDROGEOLOGY	1
NATURE OF CONTAMINATION	2
LUFT MANUAL EVALUATION	2
REMEDIALTION ALTERNATIVES	3
NO-ACTION	3
EX-SITU REMEDIALTION - SOIL EXCAVATION	3
IN-SITU REMEDIALTION	3
Hydraulic Characteristics	4
Temperature and pH	4
Soil Bulk Density	4
Moisture Content	4
BIOREMEDIALTION	4
Liquid-Phase Bioremedialtion	5
Bioventing	5
SOIL VAPOR EXTRACTION (SVE)	6
SVE Vapor Treatment	6
Carbon Adsorption	7
Catalytic Oxidation Systems	7
RECOMMENDED ALTERNATIVE	7

LIST OF FIGURES

<u>Figure No.</u>	<u>Description</u>	<u>Follows Page No.</u>
1	Site Plot Plan	7
2	Approximate Areal Extent of Soil Zones 1 and 2	7

LIST OF TABLES

<u>Table No.</u>	<u>Description</u>	<u>Follows Page No.</u>
1	Benchmark Chemical, Physical, and Biological Parameters of Contaminants	7
2	Geotechnical and Chemical Analysis Results for Soil Sample B-1-40' (March 1993)	7
3	Leaching Potential Analysis for Gasoline Containing Soil Zone #1	7
4	Leaching Potential Analysis for Gasoline Containing Soil Zone #2	7
5	In-Situ Bioventing with GAC Costs	7
6	In-Situ Soil Vapor Extraction with GAC Costs	7
7	In-Situ Soil Vapor Extraction with Catalytic Oxidation Unit Costs	7
8	Summary of In-Situ Soil Remediation Technology Screening	7

INTRODUCTION

At the direction of Unocal Corporation, Montgomery Watson (Montgomery) conducted this feasibility study (FS) for remediation of gasoline contaminated soils at Unocal Service Station #4357 located at 11280 National Boulevard, Los Angeles, California. The purpose of this feasibility study is to evaluate various technologies for remediation of gasoline contaminated soils and recommend the most feasible and economical alternative. Soil contamination data was obtained from the Phase II Report for Subsurface Investigation for Unocal Station #4357, dated April 1993. This FS letter report is organized as follows:

- Site Description
- Geology and Hydrogeology
- Nature of Contamination
- LUFT Manual Evaluation
- Remediation Alternatives
- Recommended Alternative

SITE DESCRIPTION

The subject site is located in a commercial/residential area within the City of Los Angeles, bordered by National Boulevard to the North, and Sawtelle Boulevard to the West. The property consists of a garage building and associated pump islands built in 1971 (see Figure 1). Two 10,000 gallon single-wall steel subsurface gasoline tanks and one 550 gallon waste oil tank were installed in 1971, while the 10,000 gallon single-wall fiberglass diesel tank was installed in 1982. The underground storage tanks (UST) were utilized for the storage of gasoline and diesel fuels and waste oil. Soil excavation and tank removal and replacement operations were conducted on September 22, 1992. The gasoline and waste oil tank pits were backfilled and compacted with clean imported pea gravel once the new tanks were installed.

GEOLOGY AND HYDROGEOLOGY

The site is located within the Santa Monica Groundwater Basin. The region is interpreted to be underlain by Recent Alluvium underlain by the Lakewood and San Pedro Formations. The surface of the site is covered primarily by asphalt or concrete with underlying aggregate base. Immediately below the aggregate base lies approximately 12 to 20 feet of dark brown lean clay with some silt.

The lean clay is underlain by a clayey silt which is laterally discontinuous and a silty sand whose thicknesses vary from 5 to 10 feet across the site. A second lean clay layer, approximately 3 to 10 feet in thickness, was encountered at 20 to 30 feet bgs. A clayey sand with local subangular gravel lies below the second clay layer. This clayey sand varies in thickness from 3 to 30 feet. A third thin clay layer approximately 2 feet thick, was encountered 43 and 52 feet bgs in SB-1 and B-1, respectively. This clay is underlain by a fine to medium subrounded sand.

Regional groundwater studies indicate that the Bellflower aquiclude consists of 20 to 40 feet of clay and sandy clay extending to a maximum depth of about 50 feet bgs in the site vicinity. The underlying Ballona Aquifer is reported to consist of 30 to 50 feet of gravel and coarse sand with a maximum depth of 70 feet bgs. It is reportedly underlain by the Silverado Aquifer

consisting of approximately 100 to 280 feet of sand and gravel, with small amounts of clay. The most recent measurement taken on June 1, 1992, for the Los Angeles County Monitoring Well #2546K (Elev. 151.0 feet MSL) located at Olympic and Centinela (approximately 1 mile northwest of the project site) indicate groundwater at 95.8 feet bgs (L.A. County Hydrologic Records). However, no groundwater was encountered to a depth of 95 feet bgs (Elev. 125 feet MSL) at the site during this investigation. The soils encountered in B-1 at a depth of 80 to 95 feet bgs were mostly fine to medium sand rather than the coarse sand, rounded to subrounded gravel, and cobbles up to five inches in diameter that reportedly comprise the Ballona Aquifer. In addition, there appears to be a gap in the Ballona Aquifer in the vicinity of the site. Based on the lack of groundwater to a depth of 95 feet bgs, site lithology inconsistent with that described for the Ballona Aquifer, and regional data which suggests a gap in the Ballona Aquifer in the site vicinity, it is Montgomery's opinion that Ballona Aquifer is not present underneath the project site.

NATURE OF CONTAMINATION

The major soil contaminants detected at the site of Unocal Service Station #4357 and the reported benchmark parameters are shown in Table 1. Two groups of substances can be identified: aromatics (benzene, toluene, xylene and ethylbenzene) and aliphatic hydrocarbons. The parameters listed are indicative of mobility, persistence and treatability of the chemical contaminants.

Volatilization is a significant process with respect to loss of contaminants in the unsaturated zone. Volatilization depends on several site factors, including soil porosity, moisture content, surface wind speed, temperature and nature of the surface. A contaminant property describing the potential for volatilization is Henry's constant. The substances with relatively high Henry's Law constants will partition into the air phase and higher volatilization losses will be observed for these substances. Intermediate losses are expected for the aromatics and low losses for the heavier aliphatics. The Henry's constant can also provide an indication of a compound's potential treatability using air stripping.

Biodegradation may be an important environmental factor for these compounds under the proper conditions. The biodegradation half-lives presented in Table 1 show that the aromatics are degraded at a significant rate.

LUFT MANUAL EVALUATION

On the basis of analytical data obtained during tank removal operations and the Phase II Subsurface Investigation, two separate gasoline containing soil zones can be identified. One zone is immediately underneath the pump islands to the West of the station building. The second soil zone is located in the southeast corner of the existing UST tanks (See Figure 2).

An evaluation of site conditions for the site was performed using guidance from the criteria established in the Leaking Underground Fuel Tank (LUFT) Field Manual (California State Water Resources Control Board, SWRCB, revised October 1989) to assess whether or not remedial activities will be required at this site.

The leaching potential analysis from the LUFT Manual was used to determine acceptable levels of soil contamination resulting from gasoline without posing a threat to groundwater quality at the site. As shown in Tables 2 and 3, the maximum TFH concentrations should not exceed 1,000 mg/kg and 100 mg/kg for soil zones #1 and #2, respectively. Also, the maximum BTEX concentrations should not exceed 1/50/50/50 mg/kg and 0.3/0.3/1/1 mg/kg for Soil Zones #1 and #2, respectively. The major cause of these differences in the cleanup levels is the

minimum depth to groundwater from the lowest soil sample with contaminants above the detection limits.

All soil samples collected within the Soil Zone #1 showed contaminant levels below or at the maximum allowable TFH/BTEX levels. Soil Sample P-4 had a benzene concentration of 1 mg/kg and Sample P-6 had a xylene concentration of 50 mg/kg. At both locations, samples taken at 10 feet bgs (HB-3 and 4) showed contaminant levels below detection levels. As discussed previously, immediately below the aggregate base lies approximately 12 to 20 feet of dark brown lean clay with some silt prohibiting downward migration of contaminants. Consideration of facts stated above shows no remediation is required for the Soil Zone #1.

However, soil samples collected within the gasoline containing Soil Zone #2 to a depth of 50 feet bgs indicate contaminant levels above the LUFT guidelines requiring remediation. The average TFH concentration of this contaminated soil volume was estimated to be about 642 mg/kg; which amounts to a total gasoline as TFH of about 1,200 lbs. The aerial extent of contamination requiring remediation was assumed to be 20 feet in diameter and a total depth of 50 feet.

REMEDIAL ACTION ALTERNATIVES

The three primary remedial action alternatives considered for remediation of the gasoline containing Soil Zone #2 at Unocal Station #4357 include;

- No Action
- Ex-Situ Remediation (Soil Excavation)
- In-Situ Remediation (In-Situ Bioremediation and In-Situ Soil Vapor Extraction)

NO-ACTION

This remediation alternative requires no action taken to remediate the contaminated soil. This alternative includes periodic sampling of the soil to monitor levels of contamination in soil until the concentration of the contaminants in the soil falls below the clean-up levels. There is however no guarantee that remedial action objectives will ever be achieved for the Soil Zone #2. In addition, this alternative does not comply with LUFT remediation guidelines and will not be acceptable to local government agencies.

EX-SITU REMEDIATION - SOIL EXCAVATION

Ex-situ remediation of the contaminated soil involves the excavation of the contaminated soil and transportation to a treatment storage and disposal facility for treatment. Typical ex-situ soil treatment includes bioremediation, soil flushing, soil washing, and thermal incineration. Conducting this remedial alternative at Unocal Station #4357 however, is not feasible or economical since Unocal Station #4357 is an active site and would have to cease operations while implementing this alternative. In addition, soil contamination is located in excess of 45 feet bgs, making excavation impractical.

IN-SITU REMEDIATION

In-situ soil treatment options accomplish remediation of contaminated soil on-site, eliminating costly excavation, handling, storage and disposal. In-situ contaminated soil treatment options for contaminated soil at Unocal Station #4357 include:

- Bioremediation/Bioventing
- Soil Vapor Extraction (SVE)

A number of factors are known to influence the migration and fate of contaminants in the unsaturated zone. The major factors include diffusion, sorption, volatilization, and degradation. In real world situations, these phenomena interact to determine the final distribution of the contamination. As part of the Phase II site investigation, the 40-foot soil sample from boring B-1 was analyzed for pH, porosity, bulk density, hydraulic conductivity, water saturation, contaminant saturation, air permeability, particle size, nitrogen, phosphate, bacterial plate count, and total organic carbons. Results are summarized in Table 4.

Hydraulic Characteristics - Sites with high permeability ($>10^{-4}$ cm/sec) and subsurface homogeneity will have the greatest potential for application of in-situ remediation.

Temperature and pH - Soil and ambient temperature conditions are important because most of the physical properties of contaminants that are critical to vapor recovery are temperature dependent. Generally, the lower the temperature, the more difficult it is to get organic compounds to volatilize and move through the soil. For some volatile compounds, an increase of 10 degrees centigrade can more than double the rate of volatilization and microbial activity. The pH of most natural soils ranges 5.5 to 8.5 within an acceptable biological treatment range.

Soil Bulk Density - Changes in the soil bulk density throughout the site will effect diffusion rates and airflow patterns within the vadose zone. The diffusion rates will be a function of the porosity; whereas the airflow patterns will be a function of the soil permeability. Generally speaking, dense soils will have lower porosity and lower permeabilities than loose soils. Airflow that is forced through soils with varying densities such as this site may be channeled due to the changing permeabilities. Vapors in the highly permeable strata will be extracted first by advection. As the contaminants from these strata become depleted, diffusion from the low permeability strata will increase because of higher concentration gradients. Eventually, diffusion may control vapor densities in the highly permeable strata.

Moisture Content - Water content can be a help or hindrance to the volatilization process depending on the degree of adsorptive attraction that a compound has for soil. A compound may bind very strongly on a dry soil with a reduction in its rate of volatilization. On a wet soil, the affinity for water may be stronger than the organic compound and displace it, causing volatilization to occur at a faster rate. Conversely, water may dissolve a portion of the organic compounds and change their diffusion characteristics. Water vapor may also compete with the VOCs for diffusive transport through the soil air. Finally, moisture trapped in the vadose zone may clog the pathways for air movement through the soil, effectively reducing the permeability of the matrix.

BIOREMEDIATION

Bioremediation uses microbes to degrade contaminants present in soil. The process enhances the rate of biological degradation by controlling environmental factors including: food sources, moisture content, pH, temperature, oxygen, and nutrients. Soil environmental conditions of concern to ensure effective bioremediation include: soil water at 50 to 80% of soil field capacity; pH from 5.5 to 8.5; soil temperature in the mesophilic range from 15 to 45°C; bacterial counts ranging from 10^3 to 10^7 organisms per liter and an absence of organic or inorganic toxicants that can inhibit microbial activity. The most critical limitation to successful bioremediation is generally the lack of appropriate electron acceptors. A variety of electron acceptors can be used by soil microorganisms to carry out the oxidation of organic

contaminants. These include oxygen, nitrate, sulfate, carbon dioxide and organic carbon. Of these, oxygen provides the organism with the highest energy yield.

Liquid-Phase Bioremediation

The principles of biodegradation have historically been applied to the in-situ aerobic bioremediation of contaminated soils and groundwater using water to carry oxygen (via percolation wells/trenches). In-situ liquid-phase bioremediation is performed by applying a solution of nutrients and an oxygen source to the soil, extracting groundwater downgradient and recycling it through the soil. This technology is most applicable for sites where contamination has already impacted the groundwater. However, at Unocal Station #4357 no groundwater was detected at 95 feet bgs and soil contamination was confirmed down to 45 feet bgs. Since no groundwater contamination was determined at Unocal Station #4357, introduction of nutrient solution during soil remediation requires hydraulic control and will also be a potential source of groundwater contamination which is undesirable. Taking into consideration these disadvantages, further development of the in-situ liquid-phase bioremediation alternative was ruled out.

Bioventing

Bioventing combines the capabilities of soil venting and enhanced bioremediation to cost effectively remove hydrocarbons from vadose zone soils. Gasoline contaminated soils are relatively easy to treat as gasoline is both volatile and biodegradable. Soil venting removes the most volatile components from unsaturated soil and promotes aerobic biodegradation by driving large volumes of air into the subsurface. The ratio of volatile removal to biodegradation is a function of air flow rate. By emphasizing biodegradation and minimizing volatilization during the bioventing process, the costs of system operation can be reduced, especially for off-gas treatment. In theory, air is several thousand times more effective than water in penetrating and aerating fuel-saturated and low to medium permeability soil horizons. In addition, by using air as an oxygen source, the minimum ratio of air pumped to hydrocarbon degraded is approximately 13 lbs. to 1 lb. This compares to more than 1,000 lb of water per lb of hydrocarbon for a liquid-phase bioreclamation process.

Bioventing systems are composed of hardware identical to that of conventional SVE systems, with vertical wells and/or lateral trenches, piping networks, and a blower or vacuum pump for gas extraction. They differ significantly from conventional systems, however, in their configuration and philosophy of design and operation. As indicated above, the primary purpose of a bioventing system is to use moving soil gas to transfer oxygen to the surface where indigenous organisms can utilize it as an electron acceptor to carry out aerobic metabolism of soil contaminants. As such, bioventing system extraction wells are not placed in the center of the contamination, but on the periphery of the site, where low flow rates maximize the residence time of vent gas in the soil to enhance in-situ biodegradation and minimize contaminant volatilization.

Use of bioventing technology for soil remediation requires application of vapor treatment technology for treatment of vapors generated during operation of the system. Bioventing systems are expected to reduce the vapor treatment requirement by 50 percent. As a result, approximately three 55-gallon granular activated carbon (GAC) canisters are deemed sufficient. This technology was retained for further analysis.

SOIL VAPOR EXTRACTION (SVE)

Soil vapor extraction is carried out in-situ by forcing ambient air through unsaturated zone soil using air extraction wells or a combination of air injection and extraction wells at a number of locations. The process is generally effective in removing volatile organic compounds which meet the following selection criteria:

- Vapor pressure greater than 14-mm Hg at 20°C for liquid phase hydrocarbons and;
- Dimensionless Henry's constant greater than 0.01 for aqueous phase hydrocarbons.

The hydrocarbons present at Unocal Station #4357 (gasoline and BTEX) meet these criteria. However, ethylbenzene and xylene have low Henry's constants. Since ethylbenzene and xylene have Henry's constants above the listed criterion, significant removals can probably be accomplished through soil vapor extraction.

The majority of the contaminated soils in the Soil Zone #2 are silty-sand and are believed ideal for SVE operations. As the contaminants from these strata become depleted, diffusion from the low permeability strata (lean clay underneath the pump islands) will increase because of higher concentration gradients. However, the diffusion process is much slower than volatilization, thus extending the remediation schedule. Occasionally, low cleanup levels required by agencies for soil closure may not be attainable or economically feasible with the use of SVE alone.

A vapor extraction feasibility test was conducted on September 9, 1993, by Vapor Extraction Technology, Inc., to confirm the applicability of SVE for in-situ remediation of contaminated soils at the site. An air flow rate of up to 155 scfm was utilized with an applied vacuum pressure of up to 48 inches of water column. The following are the conclusions drawn from analysis of the test;

- Estimated average effective radii of influence were between 14 and 46 feet; and
- Stabilized extracted gasoline yields ranged from an estimated 20 to 28 pounds per day per well; i.e. significant quantities of gasoline were extracted as vapor from the subsurface at the site.

SVE Vapor Treatment

Use of SVE technology for soil remediation requires application of vapor treatment technology for treatment of vapors generated during operation of the SVE system. Vapor treatment technology alternatives considered for this feasibility study include internal combustion (IC) engines, catalytic oxidation systems, and vapor phase carbon adsorption systems. Of these three technologies, IC engines were not considered for further evaluation, since on comparison to catalytic oxidation systems, the following disadvantages were identified:

- IC engines require supplementary fuel to completely consume the influent vapor, while catalytic oxidation systems are essentially self sustaining.
- IC engines have a much higher capital costs in comparison to catalytic oxidation systems.

Carbon Adsorption. Carbon adsorption removes most organic compounds from vapors through the adsorption process. Carbon adsorption is used to treat single-phase aqueous wastes with a high boiling point and high molecular weight, and volatile organics in gaseous mixtures. It is widely used to control vapors at soil and groundwater remediation facilities.

GAC systems with very high carbon usage rates are not economical. In these situations, on-site regeneration of carbon may be required to keep the system cost effective. However, the carbon usage at Unocal Station #4357 for vapor control is not expected to exceed 3000 lbs, which makes off-site carbon regeneration economical. This technology was retained for further analysis.

Catalytic Oxidation Systems. The catalytic oxidation process involves thermal incineration of the organic contents in presence of a catalyst. In this process, the air stream is first preheated by passing it through a primary heat exchanger and into the burner chamber. The preheated air is then uniformly distributed over a catalyst matrix where the hydrocarbon destruction takes place. The destruction process is an exothermic reaction whereby the hydrocarbons are converted to by-products such as carbon dioxide and water. Prior to exhausting the clean air to the atmosphere, it is passed through another heat exchanger to transfer heat energy back to the incoming stream, thus minimizing the system energy costs.

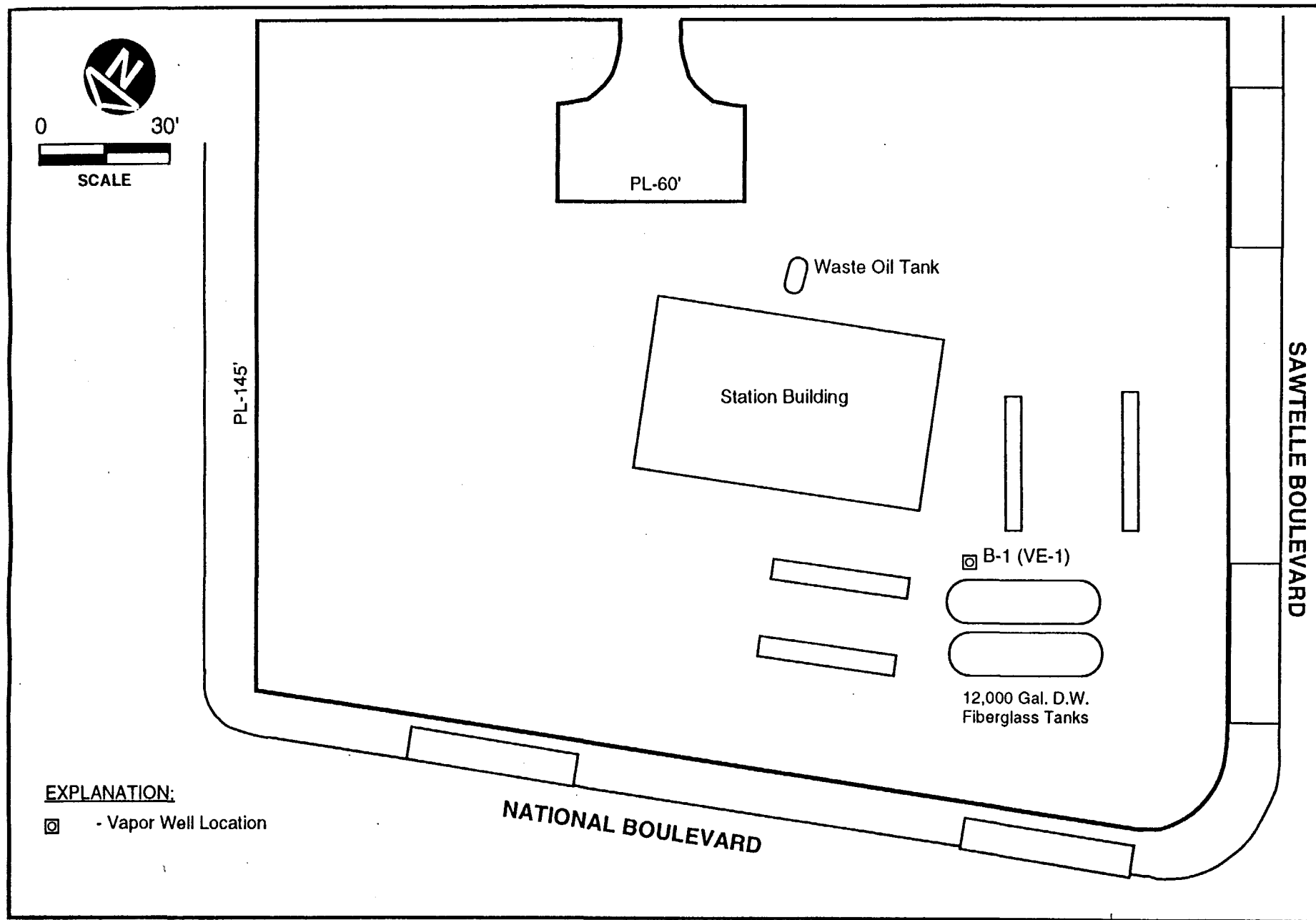
The presence of a catalyst allows for lower operating temperatures and consequently lower operating cost. The catalytic system operates at about 600°F compared to temperatures of 1200-1400°F normally required in a thermal incineration process. However, when compared to vapor phase GAC adsorption, the catalytic oxidation system has a higher capital cost but a lower O&M cost. This technology was retained for further analysis.

RECOMMENDED ALTERNATIVE

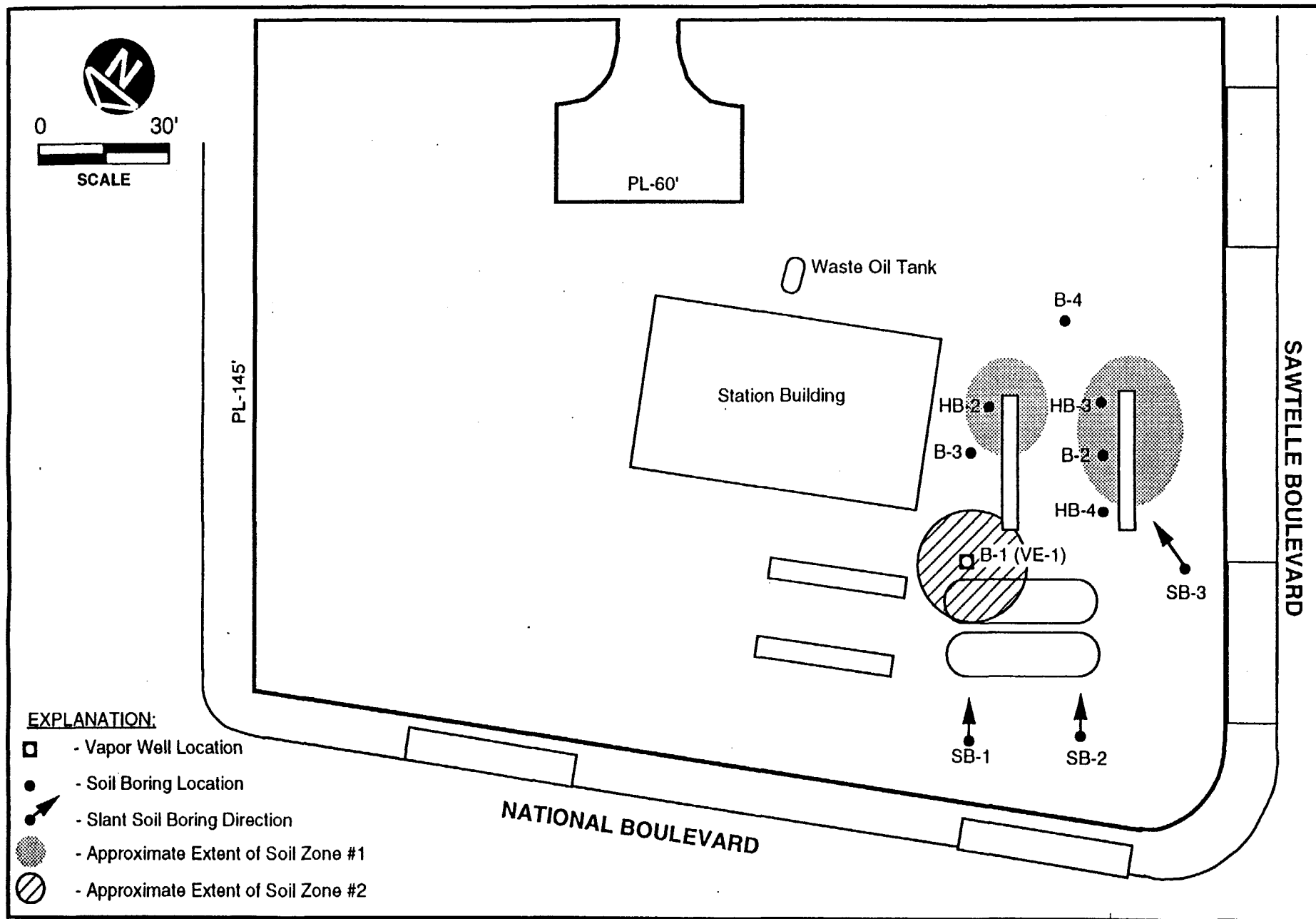
In previous sections, candidate remedial technologies that may be applicable for the management, treatment or disposal of the hydrocarbons were identified. These remedial technologies were screened according to site-specific criteria to determine which of the technologies were best suited for the site conditions and cleanup objectives. The preliminary cost estimates were developed for each technology retained for further analysis. Tables 5 through 7 provide capital and O&M costs associated with bioventing, SVE (GAC) and SVE (CatOx) systems, respectively. The cost estimates were based on vendor information and experience in developing cost estimates for similar projects. The advantages and disadvantages of each of the three alternatives are summarized in Table 8.

On comparison of costs involved in the use of the two vapor treatment technologies for SVE application; namely vapor phase GAC adsorption and catalytic oxidation (see Tables 6 & 7), it is apparent that use of vapor phase GAC adsorption is the most economical form of SVE vapor control. Other factors which favor the use of vapor phase GAC adsorption instead of catalytic oxidation systems for SVE vapor control include the complex O&M and health and safety issues associated with the use of catalytic oxidation systems.

The cost difference between the two remaining remedial technologies, bioventing and SVE (GAC) is negligible. Taking into consideration the bioventing potential of actually reaching the proposed cleanup levels, Montgomery recommends the bioventing technology for remediation of contaminated soils at Unocal Station #4357.



UNOCAL SERVICE STATION 4357
SITE PLOT PLAN
FIGURE 1



UNOCAL SERVICE STATION 4357
 APPROXIMATE AREAL EXTENT OF SOIL ZONES 1 AND 2
 FIGURE 2

TABLE 1

BENCHMARK CHEMICAL, PHYSICAL, AND BIOLOGICAL PARAMETERS
OF CONTAMINANTS

Contaminant	Molecular Weight * (g/mol)	Vapor Pressure (mm Hg) at 20°C	Specific Gravity * (g/cm ³)	Solubility in Water ** (mg/L) at 20°C	Log Octanol/ Water Partition Coefficient ** (log K _{ow})	Henry's Law Constant at 77°F (atm-m ³ /mole)	Biodegradation Half Life in Soil/Groundwater † (days)
Pentane	72.15	430	0.630	NA	NA	12.4	NA
Hexane	86.17	120	0.659	75.5	NA	9.5	NA
Heptane	100.2	35	0.684	3	NA	NA	NA
Octane	114.22	11	0.703	66	NA	1.2	NA
Nonane	128.25	3.22	0.718	0.4	NA	NA	NA
Benzene	78.12	76	0.8765	1,780	1.95-2.13	555 x 10 ⁻³	48-110
Toluene	92.15	26.10	0.8669	534	2.69	6.64 x 10 ⁻³	37-39
m-xylene	106.17	10.00	0.8642	130	3.0	2.55 x 10 ⁻³	15-37
o-xylene	106.17	10.00	0.8802	175	3.0	5.27 x 10 ⁻³	11-32
p-xylene	106.17	10.00	0.8611	198	3.0	2.51 x 10 ⁻³	17-37
Ethylbenzene	106.17	7.00	0.8670	1,520	3.15	6.44 x 10 ⁻³	37

* Weast, R.E., ed., 1982, Handbook of Chemistry and Physics, 63rd Edition.
CRC Press, Cleveland, Ohio.

**Clement Associates, Inc., 1985, Chemical, Physical and Biological Properties of Compounds Present at Hazardous Waste Sites (Prepared for EPA), except where noted.

† James Dragan, 1988, The Soil Chemistry of Hazardous Materials, Hazardous Materials Control Research Institute, Silver Springs, Maryland.

NA Not Available.

TABLE 2
GEOTECHNICAL AND CHEMICAL ANALYSIS RESULTS
FOR SOIL SAMPLE B-1-40'
(MARCH 1993)

Parameter	Method	Result
Porosity	API RP-40	34.3%
Bulk Density	API RP-40	1.73 g/cc
Hydraulic Conductivity	EPA 9100	7.36×10^{-6}
Water Saturation	Dean-Stark	91.6%
Contaminant Saturation	Dean-Stark	<0.1%
Air Permeability, Native	API RP-40	13.5 md
pH	EPA 9045	7.9 units
Nitrogen, as Ammonia	EPA 350.3	ND <10 mg/kg
Phosphate	EPA 300.0	ND <5 mg/kg
Heterotrophic Plate Count	M223	3.0×10^3 CFU/g
Total Organic Carbons	EPA 415.1	770 mg O2/kg

K - Permeability

md = Millidarcys

gm = Grams

cc = Cubic Centimeters

CFU/g = Colony Forming Units/Grams

TABLE 3
LEACHING POTENTIAL ANALYSIS FOR GASOLINE CONTAINING
SOIL ZONE #1

Site Feature	Score	10 Pts if Condition is Met	Score	9 Pts if Condition is Met	Score	5 Pts if Condition is Met
Minimum depth to groundwater from soil sample (ft)	10	>100		51 - 100		25 - 50/1
Fractures in subsurface (applies to foothills or mountain areas)	10	None		Unknown		Present
Average annual precipitation (in)	10	<10		10 - 25		26 - 40/2
Man-made conduits which increase vertical migration of leachate	10	None		Unknown		Present
Unique site features: recharge area, coarse soil, nearby wells, etc.		None	9	At least one		More than one
TOTAL POINTS	40	plus	9	plus	0	equals 49
Range of Total Points	49 points or more		41 - 48 points		40 points or less	
Maximum Allowable B/T/X/E Levels (PPM)	1/50/50/50		0.3/0.3/1/1		NA	
Maximum Allowable TFH Levels (PPM)	1,000		100		10	

TABLE 4
LEACHING POTENTIAL ANALYSIS FOR GASOLINE CONTAINING
SOIL ZONE #2

Site Feature	Score	10 Pts if Condition is Met	Score	9 Pts if Condition is Met	Score	5 Pts if Condition is Met
Minimum depth to groundwater from soil sample (ft)		>100		51 - 100	5	25 - 50/1
Fractures in subsurface (applies to foothills or mountain areas)	10	None		Unknown		Present
Average annual precipitation (in)	10	<10		10 - 25		26 - 40/2
Man-made conduits which increase vertical migration of leachate	10	None		Unknown		Present
Unique site features: recharge area, coarse soil, nearby wells, etc.		None	9	At least one		More than one
TOTAL POINTS	30	plus	9	plus	5	equals 44
Range of Total Points	49 points or more		41 - 48 points		40 points or less	
Maximum Allowable B/T/X/E Levels (PPM)	1/50/50/50		0.3/0.3/1/1		NA	
Maximum Allowable TFH Levels (PPM)	1,000		100		10	

TABLE 5

IN-SITU BIOVENTING WITH GAC COSTS

Item/Description	Quantity	Unit	Unit Cost (\$)	Total Cost (\$)
DIRECT CAPITAL COSTS (DCC)				
Bioventing Equipment Costs				
Collection Piping	200	linear foot	\$18	\$3,600
Air/Water Separator	1	each	\$2,000	\$2,000
Extraction Well	1	40 ft	\$75/ft	\$3,000
Vapor Probe Points	2	30 ft	\$60/ft	\$3,600
Blower/Starter/Explosion Proof	1	each	\$5,000	\$5,000
Emission Control Equipment Costs				
GAC Vapor Phase	3	each	\$1,500	\$4,500
Total Equipment Costs (EC)				\$21,700
Bioventing Field Costs				
Equipment Pad	50	sq. ft.	\$28	\$1,400
Permitting		lump sum		\$5,000
Mechanical				\$5,000
Power Drop				\$7,000
Direct Capital Cost				\$40,100
INDIRECT CAPITAL COSTS				
System Startup and Shakedown		20% of DCC		\$8,020
Indirect Capital Costs				\$8,020
TOTAL CAPITAL REQUIREMENT				\$48,120
OPERATING AND MAINTENANCE COSTS				
O&M for SVE System (6 Months)				
Energy	9,000	kw-hr	\$0.08	\$720
Labor	0.175	man-year	\$35,000	\$6,125
Nutrients (i.e. NH ₃)				\$1,500
System Monitoring (Analytical)	15	Bag Samples	\$500	\$7,500
Maintenance Materials		2% of DCC		\$802
TOTAL O&M COSTS				\$16,647
Contingencies		10% of Capital and O&M Subtotal		\$6,477
TOTAL REMEDIATION COSTS (INCLUDES O&M)				\$71,244

TABLE 6
IN-SITU SOIL VAPOR EXTRACTION WITH GAC COSTS

Item/Description	Quantity	Unit	Unit Cost (\$)	Total Cost (\$)
DIRECT CAPITAL COSTS (DCC)				
SVE Equipment Costs				
Collection Piping	200	linear foot	\$18	\$3,600
Air/Water Separator	1	each	\$2,000	\$2,000
Blower/Starter/Explosion Proof	1	each	\$8,000	\$8,000
Emission Control Costs				
GAC Vapor Phase - 3 Vessels	3	each	\$7,000	\$21,000
Total Equipment Costs (EC)				\$34,600
SVE Field Costs				
Equipment Pad	50	sq. ft.	\$28	\$1,400
Permitting		lump sum		\$5,000
Mechanical				\$5,000
Power Drop				\$7,000
Direct Capital Cost				\$53,000
INDIRECT CAPITAL COSTS				
System Startup and Shakedown		10% of DCC		\$5,300
Indirect Capital Costs				\$5,300
TOTAL CAPITAL REQUIREMENT				\$58,300
OPERATING AND MAINTENANCE COSTS				
O&M for SVE System (6 Months)				
Energy	15,000	kw-hr	\$0.08	\$1,200
Labor	0.175	man-year	\$35,000	\$6,125
System Monitoring (Analytical)	10	Bag Samples	\$500	\$5,000
Maintenance Materials		2% of DCC		\$1,060
TOTAL O&M COSTS				\$13,385
Contingencies		10% of Capital and O&M Subtotal		\$7,169
TOTAL REMEDIATION COSTS (INCLUDES O&M)				\$78,854

TABLE 7

IN-SITU SOIL VAPOR EXTRACTION WITH CATALYTIC OXIDATION UNIT COSTS

Item/Description	Quantity	Unit	Unit Cost (\$)	Total Cost (\$)
DIRECT CAPITAL COSTS (DCC)				
SVE Equipment Costs				
Collection Piping	200	linear foot	\$18	\$3,600
Air/Water Separator	1	each	\$2,000	\$2,000
Blower/Starter/Explosion Proof	1	each	\$8,000	\$8,000
Emission Control Equipment Costs				
Catalytic Oxidation Unit	1	each	\$33,500	\$33,500
			Total Equipment Costs (EC)	\$47,100
SVE Field Costs				
Equipment Pad	50	sq. ft.	\$28	\$1,400
Permitting		lump sum		\$5,000
Mechanical				\$5,600
Power Drop				\$7,000
			Direct Capital Cost	\$66,100
INDIRECT CAPITAL COSTS				
System Startup and Shakedown		10% of DCC		\$6,610
			Indirect Capital Costs	\$6,610
			TOTAL CAPITAL REQUIREMENT	\$72,710
OPERATING AND MAINTENANCE COSTS				
O&M for SVE System (6 Months)				
Energy	45,000	kw-hr	\$0.08	\$3,600
Labor	0.25	man-year	\$35,000	\$8,750
Fuel (last 3 months)	2160	\$/hr	\$3.00	\$6,480
System Monitoring (Analytical)	10	Bag Samples	\$500	\$5,000
Maintenance Materials		2% of DCC		\$1,322
			TOTAL O&M COSTS	\$25,152
Contingencies		10% of Capital and O&M Subtotal		\$9,786
TOTAL REMEDIATION COSTS (INCLUDES O&M)				\$107,648

TABLE 8

SUMMARY OF IN-SITU SOIL REMEDIATION TECHNOLOGY SCREENING

Technology	Costs	Schedule	Advantages	Disadvantages
Bioventing	\$72,000	12 months	In-situ bioremediation of gasoline is a proven technology	Longer schedule
			Applicable to both VOCs and non-VOCs	Will require closer operator attention
			Can achieve lower cleanup limits	Carbon regeneration required
			Most cost effective remediation technology for this site	
SVE - Vapor Phase GAC Adsorption	\$79,000	6 months	In-situ SVE is a proven technology	Carbon regeneration required
			Passive bioremediation of gasoline in soil enhanced	Achieving cleanup levels may not be feasible
			Relatively cost effective and low liability risks	
SVE - Catalytic Oxidation	\$108,000	6 months	In-situ SVE is a proven technology	More expensive than using vapor phase GAC adsorption for vapor control
			Passive bioremediation of gasoline in soil enhanced	O&M and health and safety issue more complex than use of vapor phase GAC adsorption for vapor control
				Catalytic oxidation systems do not handle vapor concentration fluctuations well

**UNOCAL
Corporate Environmental
Remediation and Technology**

**Remedial Action Plan
for Service Station #4357**

June 1994



MONTGOMERY WATSON

**REMEDIAL ACTION PLAN
for
UNOCAL SERVICE STATION #4357
11280 National Boulevard
Los Angeles, California**

Prepared For:

**UNOCAL CORPORATE ENVIRONMENTAL REMEDIATION
& TECHNOLOGY
376 South Valencia Avenue
Brea, California 92622**

Prepared By:

**MONTGOMERY WATSON
301 North Lake Avenue, Suite 600
Pasadena, California 91101**

JUNE 1994

TABLE OF CONTENTS

<u>Chapter</u>	<u>Description</u>	<u>Page No.</u>
1	INTRODUCTION	1-1
	Purpose	1-1
	Site Description and Background	1-1
	Summary of Previous Investigations	1-1
2	SITE CHARACTERISTICS	2-1
	Regional Settings	2-1
	Local Settings	2-1
3	INTERIM REMEDIAL EFFORTS	3-1
	Vapor Extraction System Pilot Study Results	3-1
	Venting Test Procedure	3-1
	Venting Test Results	3-2
4	REMEDIAL ACTION OBJECTIVES AND REMEDIATION LEVELS	4-1
	LUFT Manual Evaluation	4-1
5	REMEDIAL ALTERNATIVE	5-1
6	CONCEPTUAL REMEDIAL DESIGN	6-1
	System Description	6-1
	System Design Criteria	6-2
	Bioventing System	6-2
	GAC System	6-2
	System Operation	6-2
	Schedule	6-3
	Estimation of Clean-up Time	6-3
	Quarterly Progress Reports	6-3

Appendices

A - SVE Pilot Study Report

LIST OF FIGURES

<u>Figure No.</u>	<u>Description</u>	<u>Follows Page No.</u>
1	Site Location Map	6-3
2	Site Plot Plan & Soil Boring Locations	6-3
3	Approximate Areal Extent of Soil Zones 1 and 2	6-3
4	Geologic Cross Section A-A'	6-3
5	Proposed Bioventing System & Piping Locations	6-3
6	Vapor Extraction Well VE-1	6-3
7	Vapor Pressure Well PZ-1	6-3
8	Vapor Pressure Well PZ-2	6-3
9	Bioventing Treatment System	6-3

LIST OF TABLES

<u>Table No.</u>	<u>Description</u>	<u>Follows Page No.</u>
1	Summary of Subsurface Tank Removal Soil Sample Analytical Results (mg/kg) 9/22/92	6-3
2	Laboratory Analyses of Confirmation Soil Boring Samples (March 1993)	6-3
3	Geotechnical and Chemical Analysis Results for Soil Sample B-1-40' (March 1993)	6-3
4	Leaching Potential Analysis for Gasoline Containing Soil Zone #1	6-3
5	Leaching Potential Analysis for Gasoline Containing Soil Zone #2	6-3

Chapter 1



MONTGOMERY WATSON

CHAPTER 1

INTRODUCTION

PURPOSE

At the direction of Unocal Corporation, this remedial action plan (RAP) has been prepared by Montgomery Watson (Montgomery) to provide detailed information about the intended vapor extraction system for remediation of gasoline contaminated soils at Unocal Service Station #4357.

SITE DESCRIPTION AND BACKGROUND

The subject site is located in a commercial/residential area within the City of Los Angeles, at 11280 National Boulevard, Los Angeles, California and is bordered by National Boulevard to the North, and Sawtelle Boulevard to the West (see Figure 1).

The property consists of a garage building and associated pump islands built in 1971 (see Figure 2). Two 10,000 gallon single-wall steel subsurface gasoline tanks and one 550 gallon waste oil tank were installed in 1971, while the 10,000 gallon single-wall fiberglass diesel tank was installed in 1982. The underground storage tanks (UST) were utilized for the storage of gasoline and diesel fuels and waste oil. Soil excavation and tank removal and replacement operations were conducted on September 22, 1992. The gasoline and waste oil tank pits were backfilled and compacted with clean imported pea gravel once the new tanks were installed.

The present use of facility is retail fuel sales. At this time, it is anticipated that the site usage will continue as a Unocal Service Station.

SUMMARY OF PREVIOUS INVESTIGATIONS

The results of previous investigations are provided in the following documents, which have been submitted to the County of Los Angeles, Department of Public Works (LAC DPW), Waste Management Division, Underground Storage Tank Local Oversight Program.

- "Vapor Extraction Feasibility Test Report. Unocal Service Station #4357." dated October 25, 1993, by Vapor Extraction Technology, Inc.
- "Phase II - Subsurface Investigation Report For Station #4357." dated April, 1993, by Montgomery Watson.
- "Closure Report. Underground Storage Tank. Unocal Service Station #4357." dated December 1992, by Montgomery Watson.

Based upon the findings of the above reports, the distribution of contaminants (indicated to be gasoline) is consistent with spillage or leakage of product underneath the pump islands and product piping to the South of the tank pit (Soil Zone #1) and near the Eastern corner of the tank pit (Soil Zone #2). Figure 3 graphically depicts the approximate areal extent of both gasoline containing soil zones.

The concentration of contamination in the soil borings was greatest in the vicinity of the former underground storage tanks. Contamination was most pronounced in borings B-1 (20-foot) and C-1 (12-foot), where the samples contained 3,100 mg/kg and 3,300 mg/kg Total Fuel Hydrocarbons (TFH) respectively. In addition, soil boring samples from P-2, P-4 and P-6 contained TFH concentrations of 170, 280 and 380 mg/kg at a depth of 2 feet bgs. Analytical results are tabulated in Tables 1 and 2.

As part of the Phase II site investigation, the 40-foot soil sample from boring B-1 was analyzed for pH, porosity, bulk density, hydraulic conductivity, water saturation, contaminant saturation, air permeability, particle size, nitrogen, phosphate, bacterial plate count, and total organic carbons. Results are summarized in Table 3.

Chapter 2



MONTGOMERY WATSON

CHAPTER 2

SITE CHARACTERISTICS

REGIONAL SETTINGS

Regional groundwater studies indicate that the Bellflower aquiclude consists of 20 to 40 feet of clay and sandy clay extending to a maximum depth of about 50 feet bgs in the site vicinity. The underlying Ballona Aquifer is reported to consist of 30 to 50 feet of gravel and coarse sand with a maximum depth of 70 feet bgs (California Department of Water Resources (CDWR)-Bulletin No. 104, 1961). It is reportedly underlain by the Silverado Aquifer consisting of approximately 100 to 280 feet of sand and gravel, with small amounts of clay.

The most recent measurement taken on June 1, 1992, for the Los Angeles County Monitoring Well #2546K (Elev. 151.0 feet MSL) located at Olympic and Centinela (approximately 1 mile northwest of the project site) indicate groundwater at 95.8 feet bgs (L.A. County Hydrologic Records). However, no groundwater was encountered to a depth of 95 feet bgs (Elev. 125 feet MSL) at the site during this investigation. The soils encountered in B-1 at a depth of 80 to 95 feet bgs were mostly fine to medium sand rather than the coarse sand, rounded to subrounded gravel, and cobbles up to five inches in diameter which reportedly comprise the Ballona Aquifer. Based on the lack of groundwater to a depth of 95 feet bgs, site lithology inconsistent with that described for the Ballona Aquifer, and regional data which suggests a gap in the Ballona Aquifer in the site vicinity, it is Montgomery's opinion that Ballona Aquifer is not present underneath the project site.

LOCAL SETTINGS

The station is located within the Santa Monica Groundwater Basin. The region is interpreted to be underlain by Recent Alluvium underlain by the Lakewood and San Pedro Formations. The surface of the site is covered primarily by asphalt or concrete with underlying aggregate base. Immediately below the aggregate base lies approximately 12 to 20 feet of dark brown lean clay with some silt.

The lean clay is underlain by a clayey silt which is laterally discontinuous and a silty sand whose thicknesses vary from 5 to 10 feet across the site. A second lean clay layer, approximately 3 to 10 feet in thickness, was encountered at 20 to 30 feet bgs. A clayey sand with local subangular gravel lies below the second clay layer. This clayey sand varies in thickness from 3 to 30 feet. A third thin clay layer approximately 2 feet thick, was encountered between 43 and 52 feet bgs. This clay is underlain by a fine to medium subrounded sand. Figure 4 graphically depicts the subsurface soils at the site between 0 and 95 feet bgs. The location of geologic cross-section A-A' is shown on Figure 2.

Chapter 3



MONTGOMERY WATSON

CHAPTER 3

INTERIM REMEDIAL EFFORTS

Interim remedial efforts at this site have been previously described in "Closure Report, Underground Storage Tank, Unocal Service Station #4357," dated December, 1992, by Montgomery Watson. These efforts were confined to the removal and off-site disposal of contaminated soils associated with the removal of old tanks (two 10,000 gallon steel gasoline underground storage tanks, one 10,000 gallon fiberglass diesel underground storage tank, and a 550 gallon waste-oil tank).

Excavation and Tank Removal operations were conducted on September 22, 1992 in accordance with the South Coast Air Quality Management District (SCAQMD) Rule 1166 Permit; effective December 23, 1991 and the Los Angeles City Fire Department Regulations.

The subsurface tank removal operation was conducted by SOLRAC Enterprises, Inc., Duarte, California. The tanks were checked for the presence of liquid and/or residual product upon arrival to the site prior to initiating excavation activities. None was detected or observed. An hnu Photoionization Detector (PID) equipped with a 10.2 eV lamp was used to monitor soils on-site every 15 minutes as excavation proceeded. A tank degassing unit was then deployed by SOLRAC pursuant to SCAQMD Rule 1149 until triple rinsing of the tanks was completed. Triple rinsing was accommodated by creating a two (2) foot by two (2) foot opening in the top of the tank. The tanks were lifted from the ground under the direction of Inspector H. Dwayne Golden of the Los Angeles City Fire Department and placed directly on a flat bed truck. Following the tank removals, SOLRAC removed associated vapor and product lines.

All soils excavated on-site were transported by Pacific Environmental Management Inc., a registered hazardous waste hauler, to the Puente Hills Landfill in Whittier, California.

VAPOR EXTRACTION SYSTEM PILOT STUDY RESULTS

At the request of Unocal, a soil venting test was performed on September 9, 1993 at the subject site by Vapor Extraction Technology, Inc. The purpose of the test was to determine whether in-situ soil vapor extraction would be an appropriate form of remediation, and if so, to determine the essential parameters for the system design. These parameters include influent hydrocarbon concentrations, process flow rate, and effective radius of influence.

Venting Test Procedure

The extraction unit used by Vapor Extraction Technology, Inc. for the soil-venting test was a Sutorbuilt 4L rotary positive blower equipped with recirculation valves. The vapors were processed by passing through a Paragon Extratherm 250 thermal oxidizer. This was equipped with free-flowing dilution air to accommodate fluctuations in extracted vapor flow rates. Extracted vapor flow ranged up to 155 scfm. Measurement of the developed soil-vapor flow was accomplished with a Dwyer in-line rotameter and two calibrated Cole Palmer in-line orifice-plate flow meters, while simultaneous vacuum measurements were taken using magnehelic gauges placed on the vacuum probes. Extracted soil-vapor was measured for contaminant concentration levels for different flow rates at one to five minute intervals.

The test was conducted in duplicate. The first one was for 45 minutes, while the second one lasted 60 minutes. Vacuum was applied to the well in a stepwise fashion until the system operated at or near the maximum process flow capacity. The system was operated in a manner that was in a full compliance with SCAQMD requirements.

Venting Test Results

The soil venting test was performed on the existing extraction/monitoring well, VE-1. Applied vacuum ranged up to 48 inches of water column, while the extracted vapor flow rates ranged up to 155 scfm. The estimated effective ROI ranged from 14 feet to 46 feet (see Appendix A).

The soil-vapor samples taken during this test were analyzed for TFH and aromatics. The data shows that the tested well showed the highest measured TFH level of 783 ppmv and a GC tested constituent makeup of 1.7 ppmv benzene, 60 ppmv toluene, 180 ppmv total xylene and 60 ppmv ethylbenzene. The two samples tested as provided below. All readings are in ppmv.

<u>Sample</u>	<u>TFH</u>	<u>Benzene</u>	<u>Toluene</u>	<u>E-Ben</u>	<u>Xylene</u>
VEW-1-1	783	1.7	58	11	180
VEW-1-2	783	1.5	60	14	180

From the data gathered during the subject soil venting pilot test, in-situ vapor extraction was recommended as an appropriate form of remediation at the site. Based on raw data presented in the pilot study report, it is seen that the ROI for VE-1, which is a complex function of geology, applied vacuum, and well construction, varied between 14 and 46 feet because of the geology of the site. This variation in ROI is attributed to the lean clay which is underlain by a clayey silt.

Chapter 4



MONTGOMERY WATSON

CHAPTER 4

REMEDIAL ACTION OBJECTIVES AND REMEDIATION LEVELS

The remedial objectives at this site involve the removal of gasoline contamination from unsaturated soils with minimal disruption to current and future operations, utilizing an appropriately selected in-situ remedial alternative. The selection and design of the remedial alternative must be capable of achieving the clean-up levels as defined in the California LUFT manual, or as agreed to between Unocal and Los Angeles City Fire Department.

LUFT MANUAL EVALUATION

An evaluation of site conditions for the site was performed using guidance from the criteria established in the Leaking Underground Fuel Tank (LUFT) Field Manual (California State Water Resources Control Board, SWRCB, revised October 1989) to assess whether or not remedial activities will be required at this site.

The leaching potential analysis from the LUFT Manual was used to determine acceptable levels of soil contamination resulting from gasoline without posing a threat to groundwater quality at the site. As shown in Tables 4 and 5, the maximum TFH concentrations should not exceed 1,000 mg/kg and 100 mg/kg for Soil Zones #1 and #2, respectively. Also, the maximum BTEX concentrations should not exceed 1/50/50/50 mg/kg and 0.3/0.3/1/1 mg/kg for Soil Zones #1 and #2, respectively. The major cause of these differences in the Target Cleanup Levels is the minimum depth to groundwater from the lowest soil sample with contaminants above the detection limits.

All soil samples collected within the Soil Zone #1 showed contaminant levels below or at the maximum allowable TFH/BTEX levels. Soil Sample P-4 had a benzene concentration of 1 mg/kg and Sample P-6 had a xylene concentration of 50 mg/kg. At both locations, samples taken at 10 feet bgs (HB-3 and 4) showed contaminant levels below detection levels. As discussed previously, immediately below the aggregate base lies approximately 12 to 20 feet of dark brown lean clay with some silt prohibiting downward migration of contaminants. Consideration of facts stated above shows no remediation is required for the Soil Zone #1.

However, soil samples collected within the gasoline containing Soil Zone #2 to a depth of 50 feet bgs indicate contaminant levels above the LUFT guidelines requiring remediation. The average TFH concentration of this contaminated soil volume was estimated to be about 642 mg/kg; which amounts to a total gasoline as TFH of about 1,200 lbs. The aerial extent of contamination requiring remediation was assumed to be 20 feet in diameter with a total depth of 50 feet.

Chapter 5



MONTGOMERY WATSON

CHAPTER 5

REMEDIAL ALTERNATIVE

Consideration of the following criteria:

- The type of contamination, a volatile organic material (gasoline),
- The remedial objectives outlined in Chapter 4, and
- A preliminary review of the geologic characteristics

has led to the selection of in-situ bioventing as the most cost effective, feasible, reliable and implementable remedial alternative to be carried forward.

The proposed alternative is based on the following assumptions:

- No floating free product (FFP) exists at the site. If at a later stage any FFP is identified at the site, removal of FFP will precede implementation of the soil-vapor extraction system.
- No significant changes in soil lithology are encountered at the site that could significantly reduce the zone of influence of extraction wells.
- The area above contaminated soil is either paved or covered with an air tight material to avoid short-circuiting of air through the bioventing system.

Bioventing combines the capabilities of soil venting and enhanced bioremediation to cost effectively remove hydrocarbons from vadose zone soils. Gasoline contaminated soils are relatively easy to treat as gasoline is both volatile and biodegradable. Soil venting removes the more volatile components from unsaturated soil and promotes aerobic biodegradation by driving large volumes of air into the subsurface. The ratio of volatile removal to biodegradation is a function of air flow rate. By emphasizing biodegradation and minimizing volatilization during the bioventing process, the costs of system operation can be reduced, especially for off-gas treatment. In theory, air is several thousand times more effective than water in penetrating and aerating fuel-saturated and low to medium permeability soil horizons. In addition, by using air as an oxygen source, the minimum ratio of air pumped to hydrocarbon degraded is approximately 13 lbs. to 1 lb. This compares to more than 1,000 lb of water per lb of hydrocarbon for a liquid-phase bioreclamation process.

Bioventing systems are composed of hardware identical to that of conventional SVE systems, with vertical wells and/or lateral trenches, piping networks, and a blower or vacuum pump for gas extraction. They differ significantly from conventional systems, however, in their configuration and philosophy of design and operation. As indicated above, the primary purpose of a bioventing system is to use moving soil gas to transfer oxygen to the surface where indigenous organisms can utilize it as an electronic acceptor to carry out aerobic metabolism of soil contaminants. As such, bioventing system extraction wells are not placed in the center of the contamination, but on the periphery of the site, where low flow rates maximize the residence time of vent gas in the soil to enhance in-situ biodegradation and minimize contaminant volatilization.

Use of bioventing technology for soil remediation requires application of vapor treatment technology for treatment of vapors generated during operation of the system. Bioventing systems are expected to reduce the vapor treatment requirement by 50 percent. As a result, approximately three 55-gallon granular activated carbon (GAC) canisters are deemed sufficient. Therefore, the recommended alternative would include bioventing system followed by vapor phase GAC.

Chapter 6



MONTGOMERY WATSON

CHAPTER 6

CONCEPTUAL REMEDIAL DESIGN

The conceptual design was based on the selection of Well VE-1 as the passive injection well and a new vertical vapor extraction well (VE-2) to be utilized in the unsaturated zone remediation process. In addition, two vapor pressure sampling probe wells (PZ-1 and PZ-2) will be installed, as shown in Figure 5. Figure 6 provides an as built construction drawing for VE-1. Figures 7 and 8 provide construction details on the proposed pressure probe wells. A vacuum pump or blower induces air flow through the soil, stripping and volatilizing the VOCs from the soil matrix into the air stream.

The location of the proposed above-ground vapor treatment facility is based on the following considerations:

- a. Minimum disturbance to the operating service station at the site;
- b. Proximity to the proposed vapor extraction well; and
- c. Noise pollution created by the treatment facility. The subject site is flanked by major streets on the north and west border of the site. The placement of the treatment facility on the edge of major streets would not be advisable. The proposed location of the above-ground vapor treatment facility is located to the east of the site. It would be necessary to check the noise levels created by the treatment facility to ensure that all health protective requirements are met and minimum disturbance is created in surrounding locality.

SYSTEM DESCRIPTION

One (1) new soil-vapor extraction well (VE-2) and two (2) vapor pressure probe wells (PZ-1 and 2) are proposed for the contaminated Soil Zone #2. As shown in Figure 5, the vapor extraction/injection wells would be interconnected via sub trench to the treatment system.

Figure 9 shows a conceptual design along with an indication of the key components of the above ground vapor treatment system. A 2" ball valve at each wellhead would be installed to control the soil-vapor flow rate from each well. Vacuum extraction wells are designed with a vacuum-tight seal near the surface and an extraction/injection zone (screen) corresponding to the profile of subsurface contamination. A vacuum pump or blower induces air flow through the subsurface to transfer oxygen to the surface where indigenous organisms can utilize it as an electron acceptor to carry out aerobic metabolism of soil contaminants.

The extracted soil vapors are passed through two (2) activated carbon columns in series and the organic compounds are removed from the air stream by absorption. The spent carbon is then transported for regeneration and disposal. The effluent from the GAC columns will be vented to the atmosphere.

SYSTEM DESIGN CRITERIA

Bioventing System

Number of Proposed Injection Wells	1 (VE-1)
Number of Proposed Extraction Wells	1 (VE-2)
Number of Vapor Pressure Probe Wells	2 (PZ-1 and 2)
Well Specifications	VE-1 (existing) 4-inch diameter, vertical, 95-feet deep, PVC
	VE-2 (future) 4-inch diameter, vertical, 40-feet deep, PVC
	PZ-1&2 (future) 1/2-inch diameter, vertical, 40-feet deep, galvanized steel with SS probes
Design Flow rate	10 - 30 scfm
Extraction Vacuum	27-inch water vacuum
Blower Capacity	0.5-Hp
Well Spacing	As shown in Figure 8

GAC System

Loading rate to GAC	20 lb TPH per day (design criteria 10% LEL)
Size of GAC Vessels	55-gallon drums
Carbon Capacity	230 lbs each bed
Adsorption Capacity	20% (0.2 lb-TPH per lb-carbon)
Number of Carbon Vessels	3 (2 operated in series at one time)

SYSTEM OPERATION

The above-ground treatment system will be operated in accordance with the manufacturer's recommendations and the SCAQMD permit to operate. A permit by rule (PBR) application and the 60-day notice of intent (NOI) will be filed with CA-EPA after Los Angeles City Fire Department approval of this RAP. Montgomery will also develop a site-specific health and safety plan for the subject system.

Prior to system startup, quantification of maximum respiration rates under field conditions will be carried out utilizing in-situ respiration measurement techniques. These methods entail the oxygenation of contaminated and uncontaminated background subsurface soil around a soil gas probe via air injection for a 16 to 24 hour period, followed by the measurement of O₂ and CO₂ production at the soil gas probe over time. The collected data will be analyzed using either a zero or first order reaction rate model to generate either zero or first order respiration rate values. The background soil values will be used to correct contaminated soil values for basal soil respiration taking place at the site.

The vent system blower will be operated on a surge pumping mode until soil gas oxygen levels reach near ambient conditions throughout the soil zone being remediated. The system would then be shut off for some period of time during which soil gas oxygen concentrations would be routinely monitored until they reach a level which inhibits aerobic microbial activity. Once this limiting soil gas concentration is reached, the vent system would be restarted, and the on-off cycle would continue once again.

Soil bioactivity determination will be made throughout the system operation via analysis of soil gas O₂ and CO₂ concentrations along with the volatile organics. The key to the evaluation of soil bioactivity using these methods is the determination of the extent of oxygen depletion and carbon dioxide enrichment in soil gas with respect to background, uncontaminated soil levels.

Carbon column switching will take place if the effluent from the on-line carbon columns exceeds the preset limit, as defined by the SCAQMD permit. However, the carbon columns are not expected to be expended during the duration of the remedial action at this site.

When the recovered amount of vapor is sufficient to calculate a residual of approximately 100 mg/kg contamination remaining in the soil volume, or if the gas flow from vapor wells contains minimal concentration of hydrocarbon vapor, confirmation borings will be conducted to assess the level of remediation completeness.

SCHEDULE

Estimation of Clean-up Time

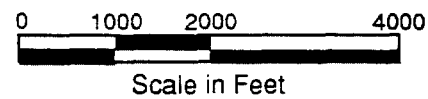
Based upon clean-up times for sites with similar geological characteristics and hydrocarbon contamination, the time for remediation is estimated at 12 months, if the initial bank of wells proves sufficient and confirmatory borings show no significant contamination.

Quarterly Progress Reports

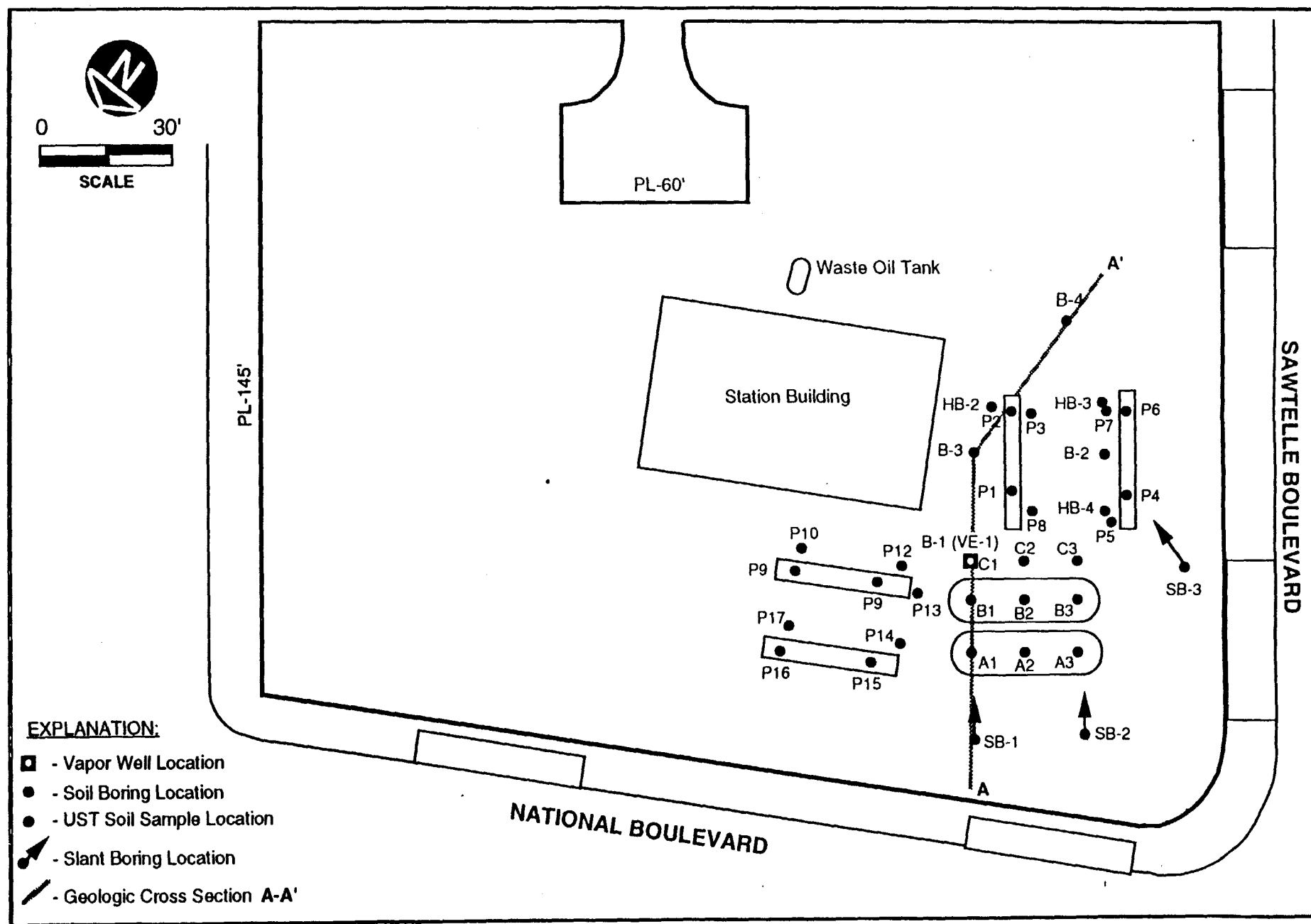
Montgomery will prepare and submit quarterly progress reports to Los Angeles City Fire Department, following Unocal review and approval.



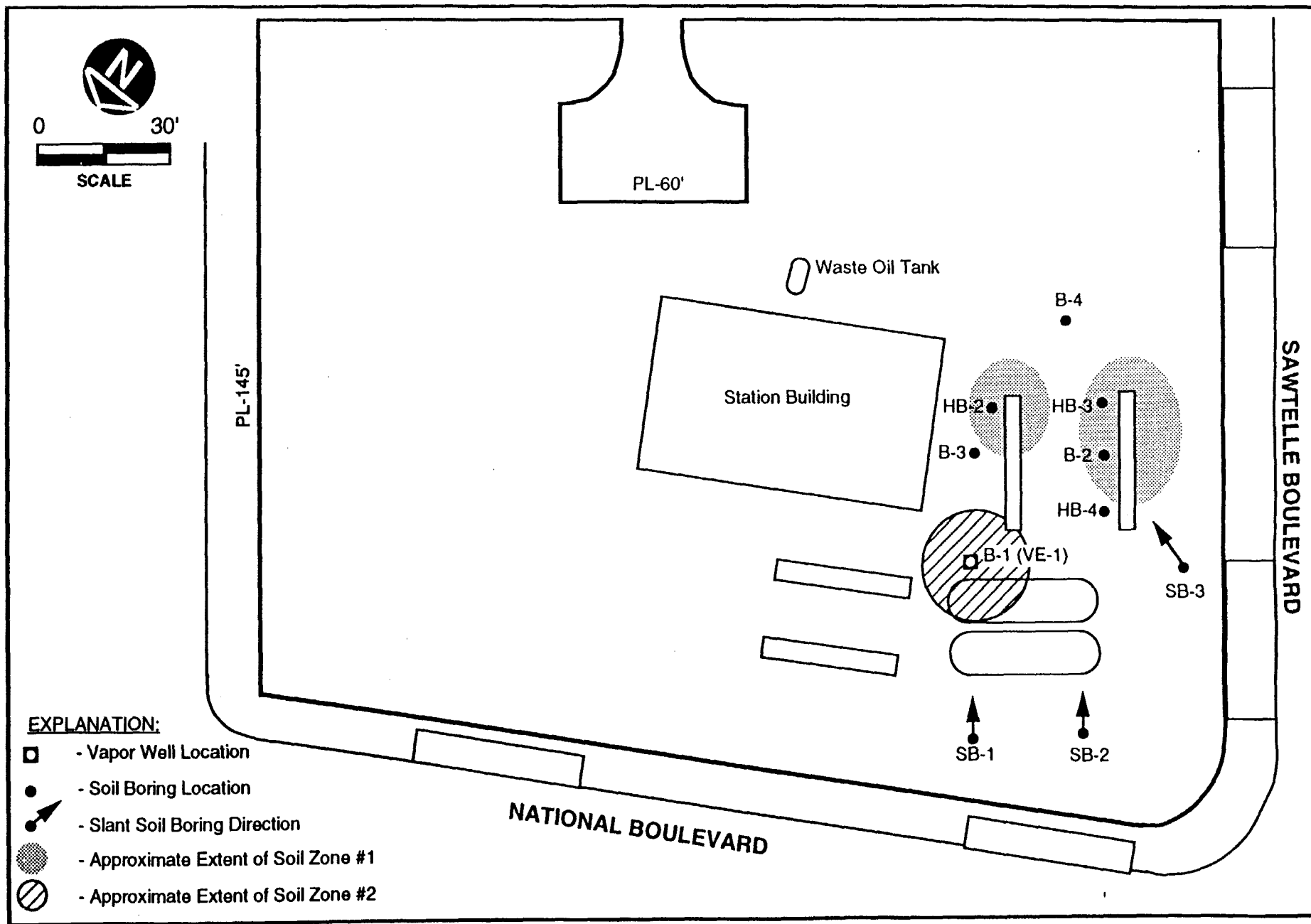
Source: 7.5 Minute Topographic Quadrangle Map
Beverly Hills, California, Dated 1966



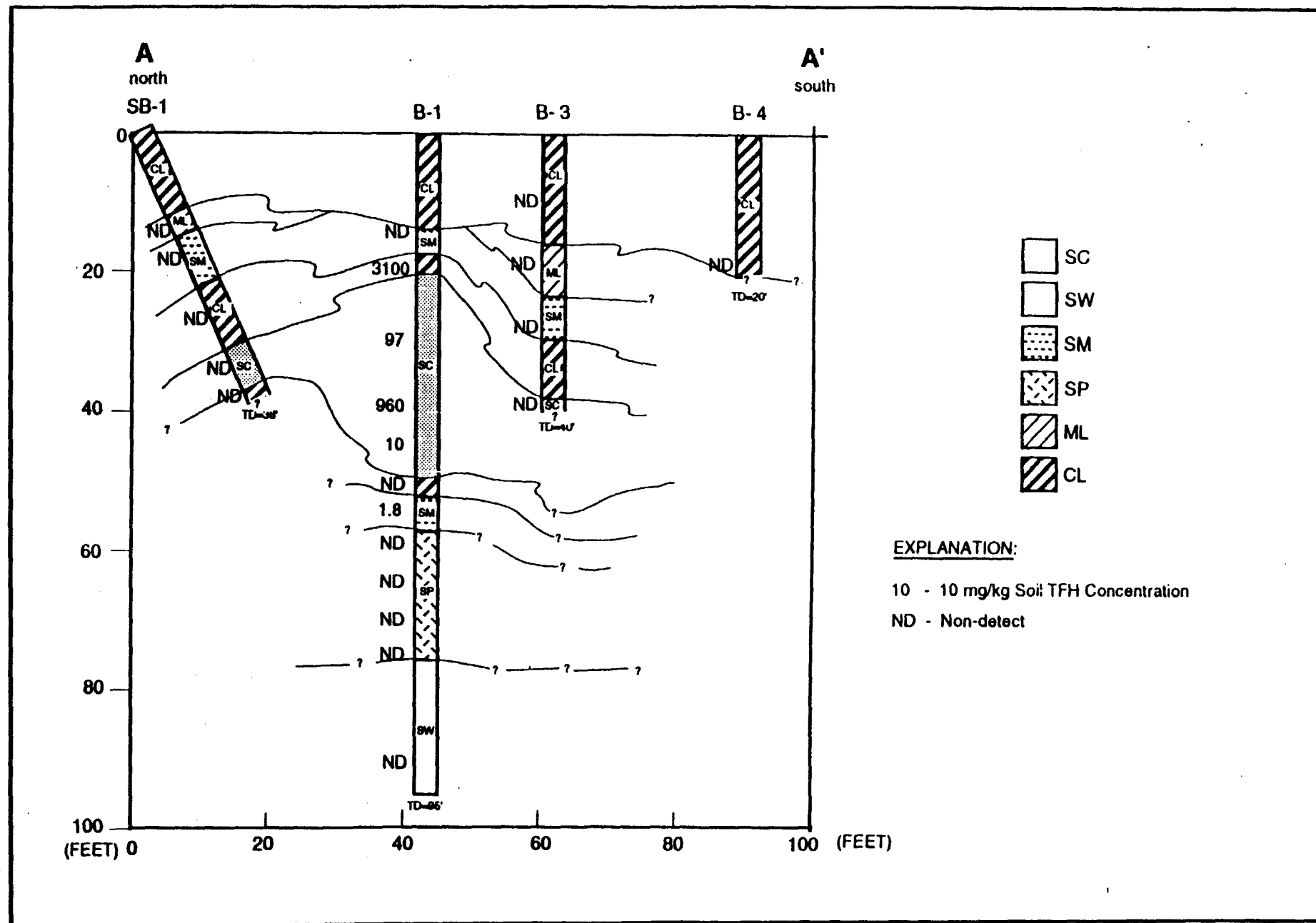
Site Location Map
Figure 1



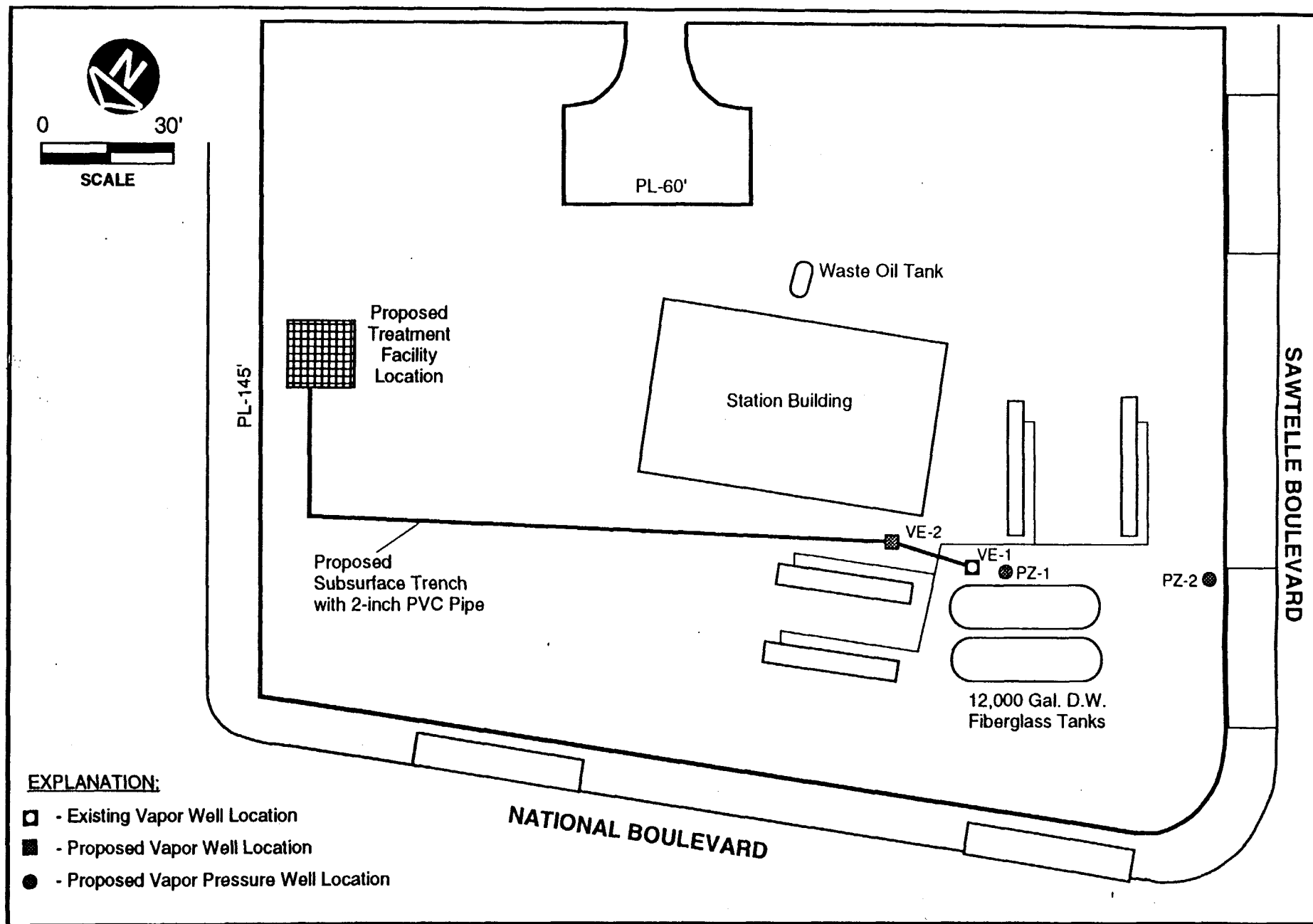
UNOCAL SERVICE STATION 4357
SITE PLOT PLAN & SOIL BORING LOCATIONS
FIGURE 2



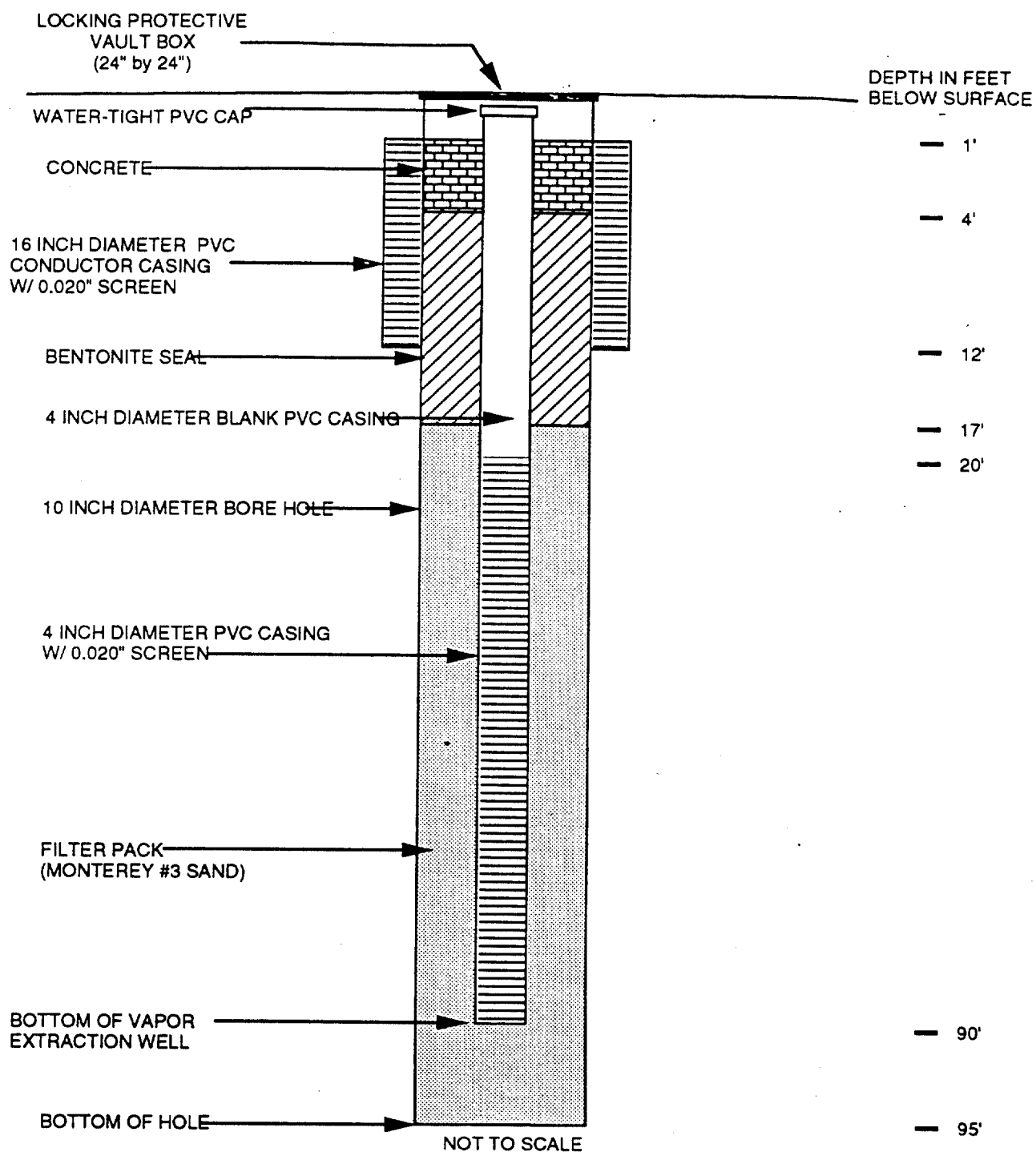
UNOCAL SERVICE STATION 4357
 APPROXIMATE AREAL EXTENT OF SOIL ZONES 1 AND 2
 FIGURE 3



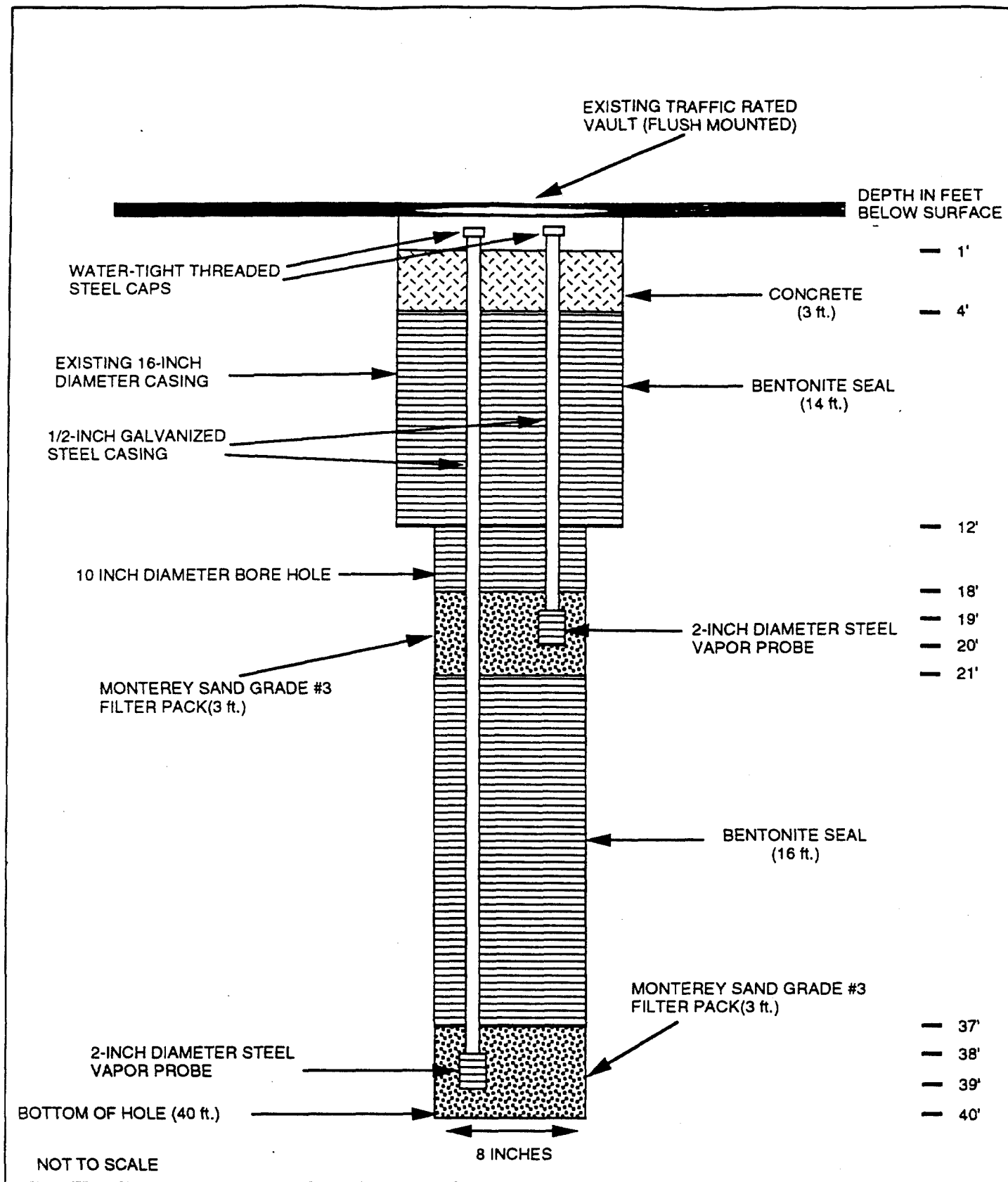
UNOCAL SERVICE STATION 4357
GEOLOGIC CROSS SECTION A-A'
FIGURE 4



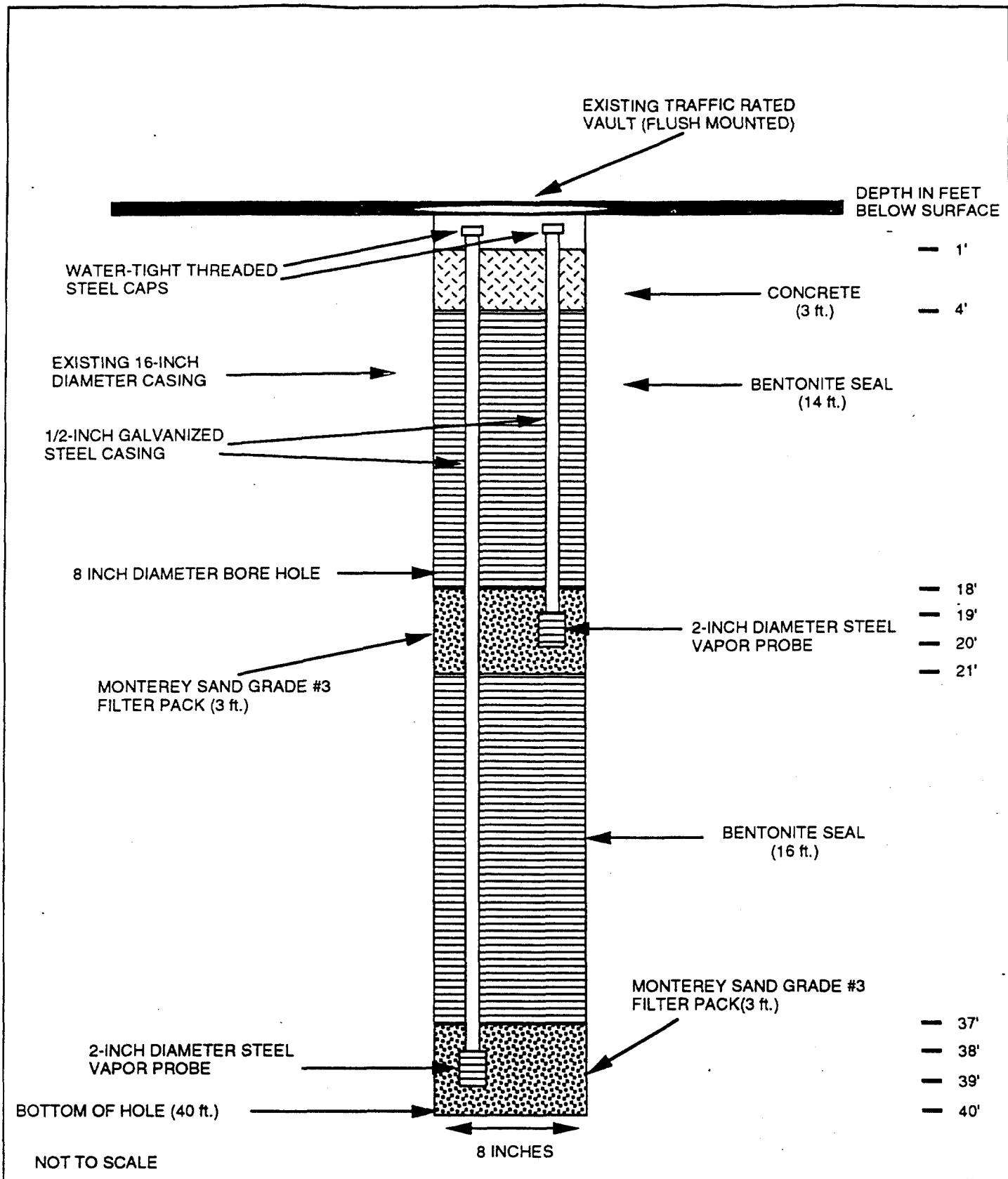
**UNOCAL SERVICE STATION 4357
PROPOSED BIOVENTING SYSTEM & PIPING LOCATIONS
FIGURE 5**



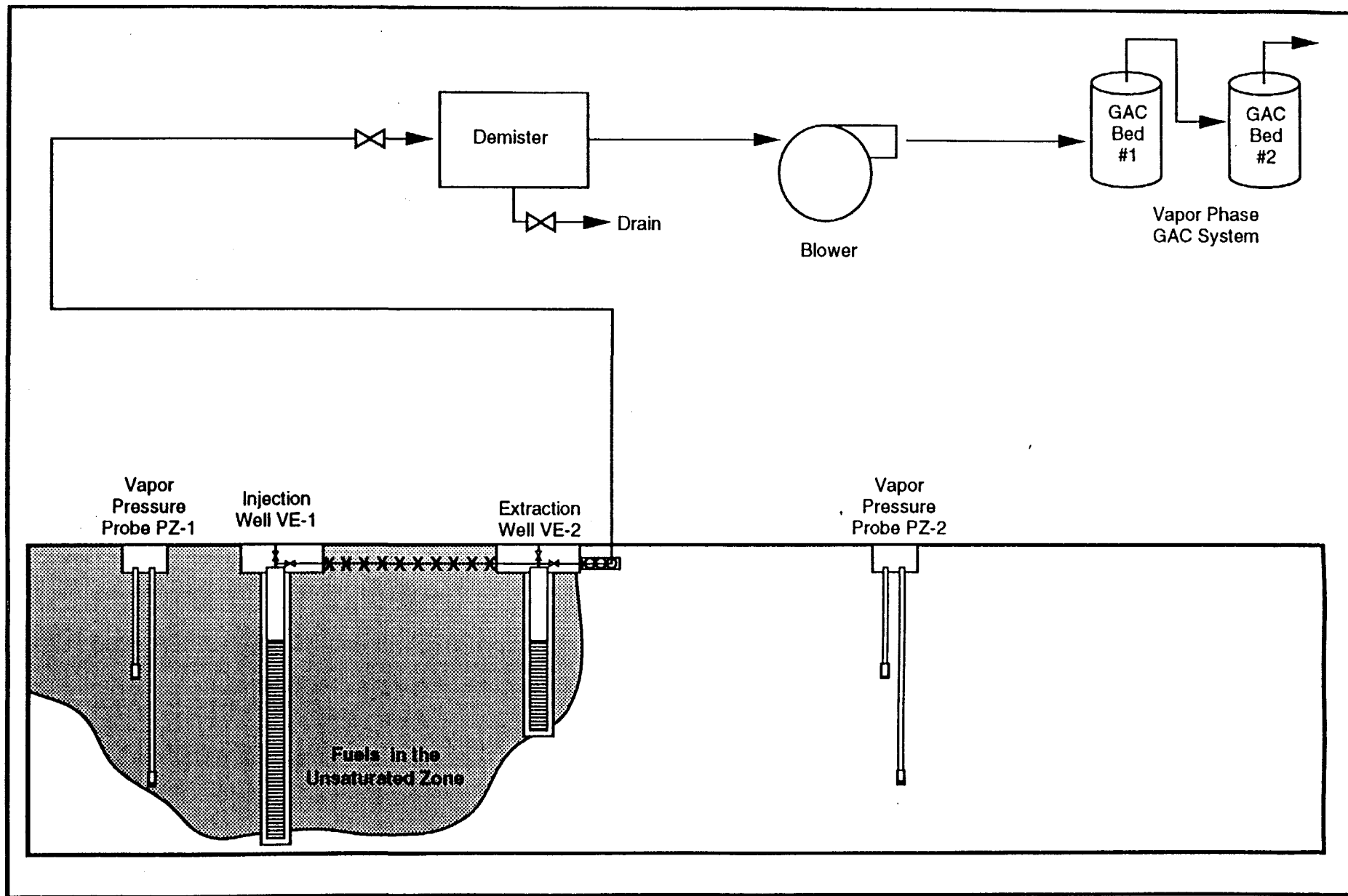
UNOCAL SERVICE STATION #4357
VAPOR EXTRACTION WELL VE-1
FIGURE 6



UNOCAL SERVICE STATION #4357
VAPOR PRESSURE WELL PZ-1
FIGURE 7



UNOCAL SERVICE STATION #4357
VAPOR PRESSURE WELL PZ-2
FIGURE 8



UNOCAL SERVICE STATION #4357
BIOVENTING TREATMENT SYSTEM
FIGURE 9

TABLE 1

SUMMARY OF SUBSURFACE TANK REMOVAL SOIL SAMPLE ANALYTICAL RESULTS (mg/kg)
9/22/92

LOG #	Depth (ft)	TPH ¹	Benzene	Toluene	Ethyl	Xylenes ² Benzene	Comments
A-1	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
A-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
A-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
B-1	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
B-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
B-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
C-1	12	3300	ND<0.5	24	79	580	Bottom sample- gasoline tank
C-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
C-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
P-1	2	ND<10	ND<0.005	ND<0.005	ND<0.005	0.042	Pump island sample
P-2	2	170	0.55	1.3	1.7	1.3	Pump island sample
P-3	2	ND<10	0.014	0.025	0.047	0.33	Product piping sample
P-4	2	280	1.0	4.7	4.8	32	Pump island sample
P-5	2	ND<20	ND<0.010	ND<0.010	ND<0.010	0.066	Product piping sample
P-6	2	380	0.8	10	5.5	50	Pump island sample
P-7	2	18	0.41	0.22	0.49	2.1	Product piping sample
P-8	2	ND<10	ND<0.005	ND<0.005	0.007	0.057	Product piping sample
P-9	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-10	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-11	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-12	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-13	2	17	0.005	0.005	0.031	0.13	Product piping sample
P-14	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-15	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-16	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-17	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample

TABLE 1 (Continued)

SUMMARY OF SUBSURFACE TANK REMOVAL SOIL SAMPLE ANALYTICAL RESULTS (mg/kg)
9/22/92

LOG #	Depth (ft)	TPH ¹	Benzene	Toluene	Ethyl	Xylenes ² Benzene	Comments
Pile 1	NA	ND<10	ND<0.005	ND<0.005	ND<0.005	0.021	Excavated soil pile
Pile 2-1	NA	140	ND<0.025	0.026	0.075	4.3	Excavated soil pile
Pile 2-2	NA	ND<10	ND<0.005	0.005	ND<0.005	0.12	Excavated soil pile
Pile 2-3	NA	ND<20	ND<0.010	ND<0.010	ND<0.010	0.12	Excavated soil pile
Pile 3	NA	110	ND<0.05	0.11	0.15	4.8	Excavated soil pile
Pile 4-1	NA	12	ND<0.005	ND<0.005	0.016	0.25	Excavated soil pile
Pile 4-2	NA	ND<10	ND<0.005	ND<0.005	ND<0.005	0.075	Excavated soil pile
Pile 4-3	NA	ND<10	ND<0.005	ND<0.005	ND<0.005	0.031	Excavated soil pile
Lab Blank	NA	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Lab Blank sample
WOT-N	NA	ND<10*					
WOT-S	NA	ND<10*					

NOTES:

1 - EPA Method 8015(M).

2 - EPA Method 8020 (BTEX).

* - EPA Method 418.1.

TABLE 2

**LABORATORY ANALYSES OF CONFIRMATION SOIL
BORING SAMPLES (MARCH 1993)**

BORING/ DEPTH (ft)	PID (units)	TFH-G (mg/kg)	TFH-D (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Total Xylene (mg/kg)	Ethylbenzene (mg/kg)
SB-1 15	4	ND		ND	ND	ND	ND
20	2.6	ND		ND	ND	ND	ND
30	2.8	ND		ND	ND	ND	ND
40	1.1	ND		ND	ND	ND	ND
45	2.4	ND		ND	ND	ND	ND
SB-2 15	3.8	ND		ND	ND	ND	ND
20	3.8	ND		ND	ND	ND	ND
30	3.8	ND		ND	ND	ND	ND
40	3.8	ND		ND	ND	ND	ND
SB-3 15	2.6	ND		ND	ND	ND	ND
30	3	ND		ND	ND	ND	ND
40	2	ND		ND	ND	ND	ND
50	2	ND		ND	ND	ND	ND
B-1 15	35	ND		ND	0.011	0.17	0.03
20	185	3100	ND<10	ND<0.5	34	520	100
30	172	97		ND<0.025	0.99	16	2.5
40	152	960		0.9	70	160	317
45	40	10		0.007	0.54	1.1	0.16
50	22	ND		ND	0.051	0.091	0.009
55	15.2	1.8		ND	0.056	0.069	0.013
60	24	ND		ND	0.031	0.063	0.009
65	32	ND		ND	ND	ND	ND
70	5	ND		ND	0.006	0.035	ND
75	18	ND		ND	0.005	0.031	0.005
90	18	ND		ND	ND	0.019	ND
B-2 15	172	8		0.047	0.019	0.052	0.016
20	152	ND	ND<10	0.19	0.006	0.087	ND
B-3 10	1	ND		ND	ND	ND	ND
20	1	ND		ND	ND	ND	ND
30	0	ND		ND	ND	ND	ND
40	1	ND		ND	ND	ND	ND
B-4 20	0	ND		ND	ND	ND	ND
HB-2 10	1.5	23		ND	ND	0.043	0.012
HB-3 10	0	ND		ND	ND	ND	ND
HB-4 10	0	ND		ND	ND	ND	ND

NOTE:

ND indicates constituents not detected above analytical limit:

TFH-G - Gasoline - ND < 1.0 mg/kg

TFH-D - Diesel - ND < 10 mg/kg

Benzene - ND < 0.005 mg/kg

Toluene - ND < 0.005 mg/kg

Ethylbenzene - ND < 0.005 mg/kg

Xylenes - ND < 0.015 mg/kg

Shaded area means results above the detection limits.

Blank space means not analyzed.

TABLE 3
GEOTECHNICAL AND CHEMICAL ANALYSIS RESULTS
FOR SOIL SAMPLE B-1-40'
(MARCH 1993)

Parameter	Method	Result
Porosity	API RP-40	34.3%
Bulk Density	API RP-40	1.73 g/cc
Hydraulic Conductivity	EPA 9100	7.36×10^{-6}
Water Saturation	Dean-Stark	91.6%
Contaminant Saturation	Dean-Stark	<0.1%
Air Permeability, Native	API RP-40	13.5 md
pH	EPA 9045	7.9 units
Nitrogen, as Ammonia	EPA 350.3	ND <10 mg/kg
Phosphate	EPA 300.0	ND <5 mg/kg
Heterotropic Plate Count	M223	3.0×10^3 CFU/g
Total Organic Carbons	EPA 415.1	770 mg O ₂ /kg

K - Permeability

md = Millidarcys

gm = Grams

cc = Cubic Centimeters

CFU/g = Colony Forming Units/Grams

TABLE 4
LEACHING POTENTIAL ANALYSIS FOR GASOLINE CONTAINING
SOIL ZONE #1

Site Feature	Score	10 Pts if Condition is Met	Score	9 Pts if Condition is Met	Score	5 Pts if Condition is Met
Minimum depth to groundwater from soil sample (ft)	10	>100		51 - 100		25 - 50/1
Fractures in subsurface (applies to foothills or mountain areas)	10	None		Unknown		Present
Average annual precipitation (in)	10	<10		10 - 25		26 - 40/2
Man-made conduits which increase vertical migration of leachate	10	None		Unknown		Present
Unique site features: recharge area, coarse soil, nearby wells, etc.		None	9	At least one		More than one
TOTAL POINTS	40	plus	9	plus	0	equals 49
Range of Total Points	49 points or more		41 - 48 points		40 points or less	
Maximum Allowable B/T/X/E Levels (PPM)	1/50/50/50		0.3/0.3/1/1		NA	
Maximum Allowable TFH Levels (PPM)	1,000		100		10	

TABLE 5
LEACHING POTENTIAL ANALYSIS FOR GASOLINE CONTAINING
SOIL ZONE #2

Site Feature	Score	10 Pts if Condition is Met	Score	9 Pts if Condition is Met	Score	5 Pts if Condition is Met
Minimum depth to groundwater from soil sample (ft)		>100		51 - 100	5	25 - 50/1
Fractures in subsurface (applies to foothills or mountain areas)	10	None		Unknown		Present
Average annual precipitation (in)	10	<10		10 - 25		26 - 40/2
Man-made conduits which increase vertical migration of leachate	10	None		Unknown		Present
Unique site features: recharge area, coarse soil, nearby wells, etc.		None	9	At least one		More than one
TOTAL POINTS	30	plus	9	plus	5	equals 44
Range of Total Points	49 points or more		41 - 48 points		40 points or less	
Maximum Allowable B/T/X/E Levels (PPM)	1/50/50/50		0.3/0.3/1/1		NA	
Maximum Allowable TFH Levels (PPM)	1,000		100		10	

Appendix A



MONTGOMERY WATSON

APPENDIX A - SVE PILOT STUDY PROGRAM

FILE COPY

VAPOR EXTRACTION FEASIBILITY TEST REPORT

UNOCAL SERVICE STATION #4357

11280 National Blvd.

Los Angeles, California 90068

October 25, 1993

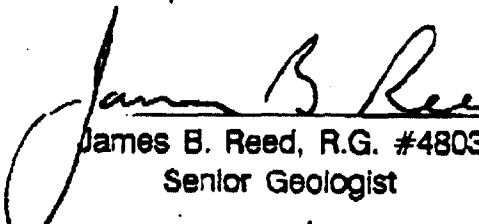
Prepared for:

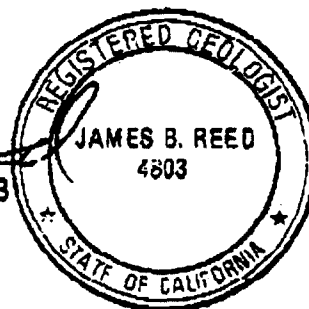
Mr. Jim Adams
UNOCAL Corporation
CERT - Southern Region
376 S. Valencia
Brea, CA 92621

Prepared by:

Vapor Extraction Technology, Inc.
1062 Calle Negocio, Suite J
San Clemente, CA 92673
(714) 492-7732

Project No. 1.029.50.1


James B. Reed, R.G. #4803
Senior Geologist





Thomas P. Lahey
President



TABLE 1
SUMMARY OF VAPOR EXTRACTION TEST DATA
 UNOCAL SERVICE STATION #4357
Vapor Extraction Technology, Inc.

WELL I.D. / DATE	TIME (24-HR)	O2 (%)	TPH (%LEL)	TPH (PPM)	VAC (IN.H2O)	FLOW (SCFM)	COMMENTS
VE-1 9-Sep-93	1020						START TEST
	1021	3.5	1		42	145	NO DILUTION. NO RECIRC.
	1022	3.2	1		42	145	
	1023	3.2	2		44	145	
	1024	3.2	2		44	145	
	1025	3.2	2	740	44	145	
	1030	3.8	2		44	145	
	1035	3.8	3		44	145	
	1040	4	3		44	145	
	1045	4.2	3		44	145	
	1050	4.4	3		44	145	
	1055	4.6	4		44	145	
	1100	4.9	4		44	145	
	1105						STOP. CHANGE SHEAVING TO INCREASE
	1110						BLOWER SPEED
	1115						
	1120	5.3	4		47	155	
	1125	5.3	4		48	155	
	1130	5.3	4		48	155	SAMPLED
	1135	5.3	4		48	155	
	1140	5.4	4		48	155	
	1145	5.7	4		48	155	
	1150	5.7	4		48	155	
	1205	6	4		48	155	
	1210	6.2	4		48	155	
	1215	6.2	4		48	155	SAMPLED
	1220						STOP TEST

TABLE 2
RADIUS OF INFLUENCE DATA AND RESULTS
UNOCAL SERVICE STATION #4357
Vapor Extraction Technology, Inc.

EXTRACTION WELL OR WELL GROUP (DATE)	OBSERVATION WELL	TIME MEASURED (24-hour)	HORIZONTAL DISTANCE FROM NEAREST EXTRACTION WELL (feet)	INDUCED VACUUM (in. water)	ESTIMATED AVERAGE EFFECTIVE RADIUS OF INFLUENCE (feet)
VEW-1 (9/9/93)	VES UNIT	1023	0	40	14 to 44
	VP-1	1050	14	0.03	
	VP-2	1050	31	0.01	
	VP-3	1050	35	0.135	
	VP-4	1050	62	0.04	
VEW-1 (9/9/93)	VES UNIT	1210	0	48	15 to 46
	VP-1	1210	14	0.035	
	VP-2	1211	31	0.01	
	VP-3	1212	35	0.15	
	VP-4	1212	62	0.04	

TABLE 3
ANALYTICAL RESULTS OF VAPOR SAMPLES

UNOCAL SERVICE STATION #4357
Vapor Extraction Technology, Inc.

SAMPLE ID	MATRIX	DATE SAMPLED	TPH AS GASOLINE		LAB RESULTS				
			FIELD READING						
			(ppmv)	(mg/m3)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)
			TPH calibrated to methane	TPH	TPH	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES
VEW-1-1	CHARCOAL	9/9/93	560	2,800	783	1.7	11	58	180
VEW-1-2	CHARCOAL	9/9/93	560	2,800	783	1.5	14	60	180

QA/QC: *JP*

NOTES

1. ND = not detected at or above lab detection limit; NS = not sampled for lab analysis; NA = not available or applicable.
2. Field readings obtained with VET's Gastech Model 1218 Explosimeter and %O2 Meter.
3. Vapor concentration conversions generally from the following standard formulas:

$$\text{mg/m}^3 = \frac{P \times MW \times \text{ppmv} \times 1000}{82.05 \times T}$$

where,

mg/m3 = milligrams per cubic meter of analyte

P = pressure in atmospheres

MW = molecular weight of analyte

ppmv = part per million by volume of analyte

82.05 = gas constant

T = absolute temperature in degrees K; room temp is 293 deg K

MW gasoline = 86, average (may vary with labs)

*Reference: CARB, 1986

$$\text{ppmv} = \%LEL \times 140$$

4. Lab samples analyzed by NIOSH methods 1501 modified and 1550 modified.

TABLE 4 SUMMARY OF VAPOR EXTRACTED GASOLINE

UNOCAL SERVICE STATION #4357

Vapor Extraction Technology, Inc.

End of test (date, time)	Extract. well ID	Duration of Test (min.)	Average Vacuum (inches of Water)	Average Inlet Flow Rate (SCFM)	Average Inlet Concentration		Product Removal Rate Gasoline (lb/day)	Total Product Removed	
					%l Fl	(ppmv as Gasoline)		Gasoline (lbs)	Cum. Gas (lbs)
9/9/93, 1100	VEW-1	45	44	145	3	420	19.9	0.6	0.6
9/9/93, 1220	VEW-1*	60	48	155	4	560	28.4	1.2	1.8
Total		105							
							total gallon equivalent:		0.3

QA/QC *jr*

NOTES:

- Measurements of this table were obtained using standard VET VES procedures.
- Product removal rate and total pounds were calculated using the following standard* formula:

$$\text{lb/day} = \frac{\text{ppmv} (60 \text{ min/hr})(24 \text{ hr/day})(\text{SCFM})(86 \text{ lb/lb-mole})}{(1,000,000)(379 \text{ ft}^3/\text{lb-mole})}$$

where, ppmv = concentration in parts per million by volume TPH as gasoline.

SCFM = vapor flow rate in standard cubic feet per minute.

86 lb/lb-mole = ave. molecular weight of gasoline. Benzene is 78.11.

379 ft³/lb-mole = ideal gas constant.

*Reference: South Coast Air Quality Management District, 6/6/91.

- Gallons of product removed were calculated using: gasoline = 6.8 pounds/gallon.
- The mass calculations presented here are partly based upon field and lab procedures which are subject to improvements by VET.

FIGURE 2. SUMMARY OF VAPOR EXTRACTED GASOLINE

UNOCAL SERVICE STAT ON #4357

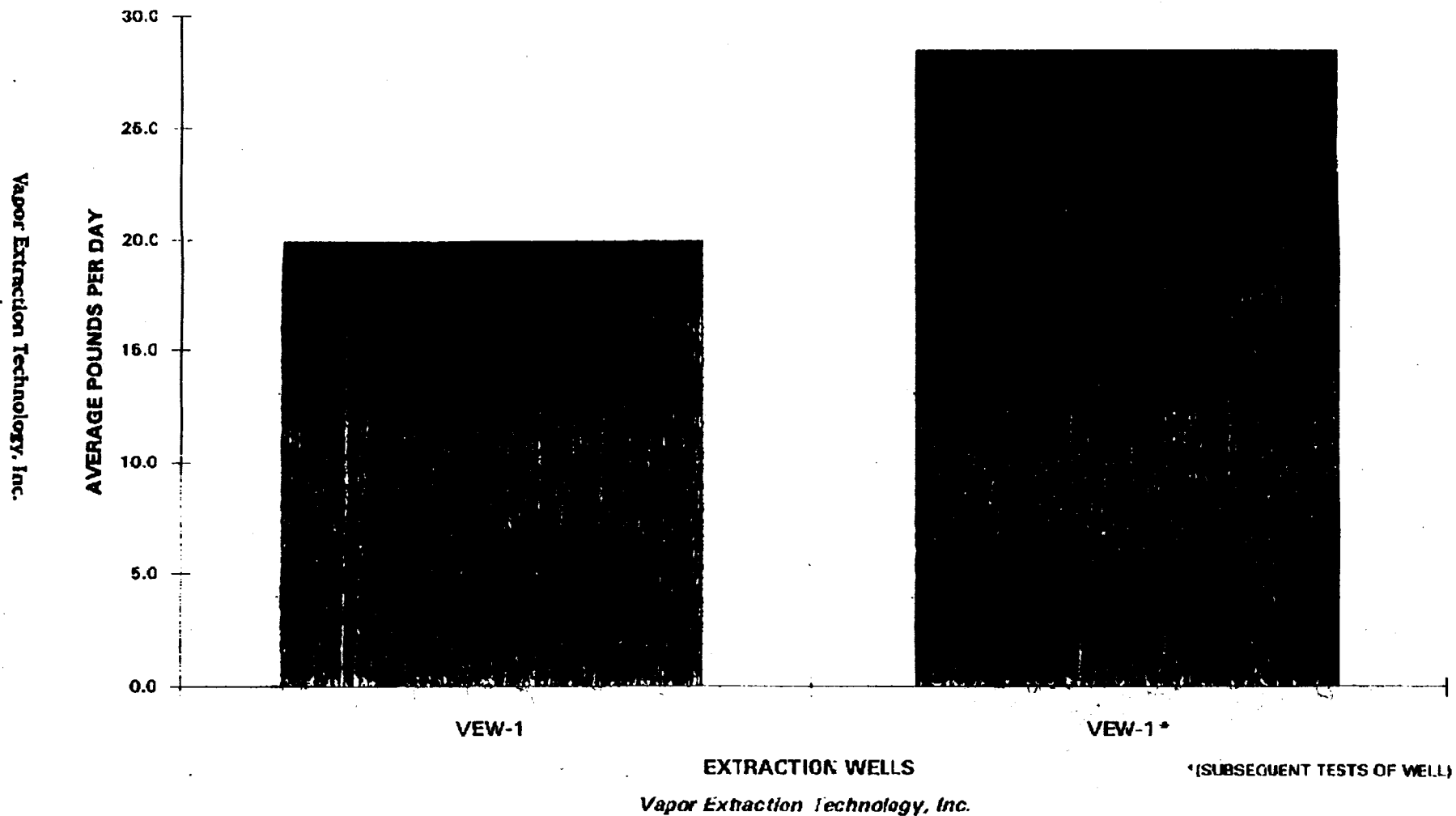
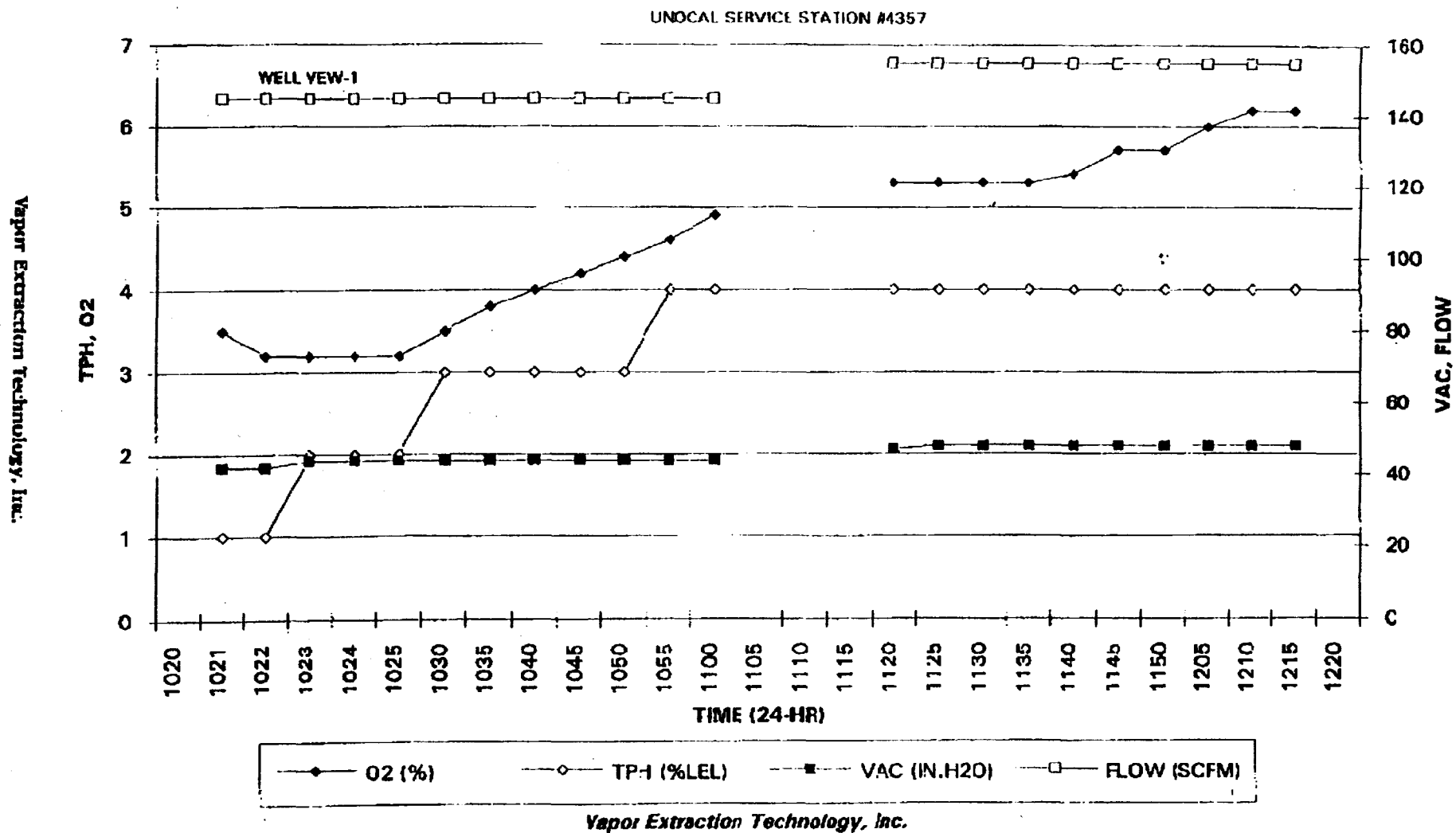


FIGURE 1. SUMMARY OF VES TEST DATA



VAPOR EXTRACTION FEASIBILITY TEST REPORT

UNOCAL SERVICE STATION #4357

11280 National Blvd.
Los Angeles, California 90066

October 25, 1993

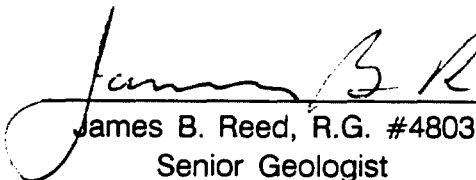
Prepared for:

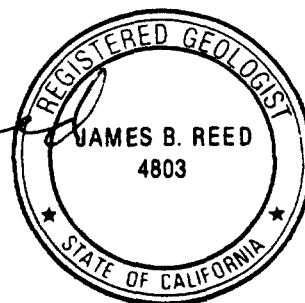
Mr. Jim Adams
UNOCAL Corporation
CERT - Southern Region
376 S. Valencia
Brea, CA 92621

Prepared by:

Vapor Extraction Technology, Inc.
1062 Calle Negocio, Suite J
San Clemente, CA 92673
(714) 492-7732

Project No. 1.029.50.1


James B. Reed, R.G. #4803
Senior Geologist



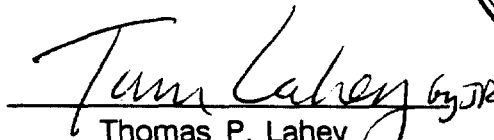

Thomas P. Lahey
President



TABLE OF CONTENTS

	<u>Page</u>
1.0 EXECUTIVE SUMMARY	1
2.0 INTRODUCTION	2
2.1 Purpose	2
2.2 Site Background	2
2.3 Site Subsurface Conditions	2
2.4 Site Wells	3
2.5 The Vapor Extraction Feasibility Testing Concept	3
3.0 VAPOR EXTRACTION TESTING PROCEDURES	4
3.1 Site Testing Equipment	4
3.1.1 Vapor Extraction System	4
3.1.2 Vacuum Gauges	4
3.1.3 Field Gas Detectors	5
3.1.4 Flow Meters	5
3.2 Site Testing Operations	5
3.2.1 Vapor Sampling and Analysis	5
4.0 DATA AND RESULTS	6
4.1 Vapor Extraction Results	6
4.2 Radius of Influence Results	6
4.3 Analytical Results	6
4.4 Gasoline Yield	7
5.0 CONCLUSIONS AND RECOMMENDATIONS	8
6.0 LIMITATIONS	9
7.0 REFERENCES	10

TABLES

1. Summary of Vapor Extraction Test Data
2. Radius of Influence Data and Results
3. Analytical Results of Vapor Samples
4. Summary of Vapor Extracted Gasoline

FIGURES

1. Summary of VES Test Data
2. Summary of Vapor Extracted Gasoline

APPENDIX

- A. Site Assessment Maps and Tables
- B. Radius of Influence Graphs
- C. Laboratory Report

1.0 EXECUTIVE SUMMARY

Vapor Extraction Technology, Inc. (VET), was retained by Unocal Corporation to perform a vapor extraction feasibility test at the subject gasoline service station. The subsurface at the site has been affected by gasoline and is currently under environmental assessment.

VET performed the extraction test on well VE-1 at the site on September 9, 1993. VET utilized two vapor extraction systems in series to provide various applied vacuums to the well and to treat the extracted hydrocarbon vapors by thermal oxidation. Extracted stabilized vapor concentrations ranged up to 4% of the lower explosive limit (LEL) for gasoline. Extracted stabilized vapor flow rates ranged up to 155 standard cubic feet per minute (SCFM) at applied vacuums ranging up to 48 inches of water column (in.w.c.). The estimated average effective radii of influence were between 14 and 46 feet. Stabilized extracted gasoline yields ranged from an estimated 20 to 28 pounds per day per well.

Based upon this test, it is concluded that: 1) significant quantities of gasoline were extracted as vapor from the subsurface at the site; 2) the site responded well to the influences of vapor extraction; 3) radii of influence was adequate, but variable in direction; and, 4) an estimated 1.8 pounds (0.3 gallons) of gasoline were extracted during this test.

VET recommends that vapor extraction should be considered as an effective remediation option at this site.

2.0 INTRODUCTION

2.1 PURPOSE

The primary purpose of this vapor extraction feasibility test was to:

- o determine the extracted vapor flow rates and product yield for various applied vacuums from the tested well;
- o determine steady-state radius of influence of the tested well;
- o provide data to determine if the area of influence created by vapor extraction from the existing well would be sufficient to encompass the entire zone of hydrocarbon-affected soil at the site;
- o determine whether vapor extraction is a viable remediation option at this site, and if so, provide a basis of design for the most cost-effective vapor extraction and abatement system for the site;
- o extract a significant quantity of gasoline from the well at the site in order to evaluate total remediation of the site.

2.2 SITE BACKGROUND

The site, located as shown in the figures of Appendix A, is an operating service station and currently under environmental investigation. Two fuel underground storage tanks (USTs) and four fuel dispenser islands are present at the site.

For this project, VET was provided with site assessment data by Montgomery Watson Company which included a map, cross section, and soil analytical data (Appendix A). Consultants previously working at the site have installed one vadose-zone vapor extraction well and 9 additional soil borings at the site (see Appendix A). Plans are underway for further subsurface assessment and/or remediation.

2.3 SITE SUBSURFACE CONDITIONS

Based upon the boring data by previous workers, soils beneath the site are composed mostly of sand, clayey sand, and clay to a depth of approximately 95 feet below

ground surface (bgs) (see cross-section of Appendix A). Groundwater depth at the site is unknown, but apparently it is below 95 feet (see Appendix A).

Based upon the data provided by previous site assessments, hydrocarbon-affected soil at the site, prior to the vapor extraction operations described in this report, ranged up to 3,100 parts per million (ppm) total petroleum hydrocarbon (TPH). Based upon the drilling to date, this hydrocarbon-affected soil is apparently mostly limited to a relatively small area near the USTs and well VE-1. Apparently, the highest concentrations of hydrocarbon-affected soil is limited to the upper 45 feet bgs at the site.

2.4 SITE WELLS AND PROBES

One vadose-zone vapor extraction well is located at the site. The well is constructed as shown in Appendix A.

Soil vapor probes were installed to monitor vacuum near the well. Probes were installed to eight feet deep next to previous boring locations at the site (see map, Appendix A).

2.5 THE VAPOR EXTRACTION FEASIBILITY TESTING CONCEPT

When a vapor extraction system is designed and constructed properly, it can be one of the most cost-effective methods of remediation for soils and groundwater affected by gasoline or other relatively volatile organic compounds. In order to properly design a system, which includes optimum placement of extraction wells and adequate sizing of extraction equipment, the site subsurface conditions relating to vapor extraction first must be determined.

By applying a vacuum and removing hydrocarbon vapors from extraction wells, advective vapor flow is induced through the vadose (unsaturated) soil zone. The contaminants volatilize from soil and/or groundwater and are transported as vapor to the extraction wells via the induced air flow.

Four main factors affect the performance of a vapor extraction system, and thus the total duration of site remediation. These factors are: 1) the physical and chemical properties of the contaminants; 2) concentrations of the contaminants throughout the vadose zone and in the groundwater; 3) the extracted vapor flow rates; and, 4) the induced vapor flow-path in relation to the zone of soil and groundwater contamination. These factors are quantified in a feasibility test and are then used to design the appropriate vapor extraction system for the site.

3.0 VAPOR EXTRACTION TESTING PROCEDURES

The vapor extraction feasibility test was performed at this site on September 9, 1993 by VET personnel. The test consisted of a vapor extraction system (VES), a series of extraction and monitoring points (wells and probes), and various instruments to monitor the effects of the test and collect data.

The basic procedure followed for this feasibility test was the single extraction well test method. This method involves the hook-up of one well to the VES during each well extraction event or test. During the well test, which typically lasts between 20 minutes and one hour, the extraction well and adjacent wells or probes are monitored. Upon completion of the event, the VES is disconnected from the well and a different well is then connected to the VES. The next event proceeds as before, until all appropriate wells of the feasibility test have been tested and monitored.

3.1 SITE TESTING EQUIPMENT

3.1.1 Vapor Extraction System

A Paragon Extratherm 250 thermal oxidizer was used to both extract gasoline vapors and treat the vapors from the well. The well was additionally vapor extracted using a Sutorbuilt 4L rotary positive blower equipped with recirculation valves. The combination of these two vapor extraction systems allowed for the variation of applied vacuums and the measurement of undiluted extracted vapor concentrations and vapor flow rates from the well. The thermal oxidizer was used exclusively to treat the extracted gasoline vapors and was equipped with free-flowing dilution air to accommodate different extracted flow rates from the wells.

Temporary electrical power was provided using a Whisperwatt 25 three-phase generator. Propane was used as auxiliary fuel for the oxidizer.

3.1.2 Vacuum Gauges

The well-heads and probes were custom fitted with attachments to allow for vapor extraction in conjunction with vacuum monitoring. The vacuum gauges used on the well and probes were magnehelic gauges measuring vacuum relative to ambient pressure in inches of water column (in.w.c.). The ranges of the different magnehelic gauges used were 0 to 0.25, 0 to 0.50, 0 to 10, 0 to 100, and 0 to 200 in.w.c.

3.1.3 Field Gas Detectors

The field gas detectors used to monitor vapor concentrations were the:

1. Foxboro OVA 128-GC.
2. Gastech Model 1218 Explosimeter and %O₂ Meter.

Both units were calibrated to methane in zero-gas air according to manufacturer specifications prior to field use.

3.1.4 Flow Meters

VET utilized three flow meters to measure the extracted soil-vapor flow rates for various applied vacuum. Low-range flow (0-50 SCFM) was measured using a calibrated Dwyer in-line rotameter. Medium and high-range extracted flow rates (0-110 and 0-210 SCFM) were measured using calibrated Cole Parmer in-line orifice-plate flow meters.

3.2 SITE TESTING OPERATIONS

VET personnel conducted the vapor extraction test on the well VE-1 at the site. Magnehelic gauges were placed on all other probes on the site. All gauges were zeroed prior to starting the test and were monitored during extraction to determine magnitude of vacuum propagating from the extraction well to each of the other probes.

The initial test event was carried out for 45 minutes. One additional extraction well test, which lasted 60 minutes, was conducted subsequent to the first test. During each test, extracted gasoline vapor concentrations, induced vacuum, extracted flow rates, and other parameters were recorded at one- to five-minute intervals (Table 1).

3.2.1 Vapor Sampling and Analysis

Vapor samples collected for lab analysis were obtained in SKC carbon tubes and Tedlar bags. The collected samples were immediately sealed, labelled, and placed into a styrofoam cooler. The cooler was kept at ambient temperature until delivery at the certified laboratory. The samples were transported under documented chain-of-custody-procedures.

4.0 DATA AND RESULTS

The radius of vacuum influence and the quantity and rate of removal of gasoline were determined as a function of applied vacuum for the extraction wells. The results of these evaluations are presented in this section.

4.1 VAPOR EXTRACTION RESULTS

The data for the VES test is summarized in Table 1 and Figure 1. For the test, extracted stabilized gasoline vapor concentrations ranged up to 4% of the lower explosive limit (LEL) of gasoline, or approximately 560 parts per million (ppm) total petroleum hydrocarbons (TPH) as gasoline. Extracted stabilized oxygen (O_2) concentration ranged from 3 to 6%. Applied vacuum ranged up to 48 inches of water column (in.w.c.). Extracted vapor flow rates ranged up to 155 standard cubic feet per minute (SCFM).

4.2 RADIUS OF INFLUENCE RESULTS

The empirically-derived radii of influence (ROI) for the vapor extraction well evaluated during the feasibility test are presented in Table 2. The graphs of induced vacuum versus distance from the extraction well are presented in Appendix B. The estimated average effective ROI ranged from 14 to 46 feet. As shown by the graphs, ROI varied with direction from the extraction well.

Effective radius of influence for the purpose of this test is defined as the distance from an extraction well where at least 0.1 in.w.c. may exist based upon observed data. This distance is estimated using a straight-line fit of the data points on each of the semi-log graphs of Appendix B.

Radius of influence is a complex function of mainly geology, applied vacuum, and well construction. Each well in a feasibility test will have a unique radius of influence value which will vary in direction from the well-head based on the different geologic conditions and well construction materials and design.

4.3 ANALYTICAL RESULTS

Two vapor samples were collected for laboratory analysis and are summarized in Table 3. Based upon the laboratory results, the extracted vapor samples contained 783 ppm TPH, with 1.5 and 1.7 ppm benzene.

As shown in Table 3, there is a good correlation of TPH between the lab data and field

instrument readings for these samples. It should be noted that the field instrument measures LEL which is a function of oxygen content which was low in the vapor streams throughout the testing. Under unusually low oxygen conditions, TPH derived from the LEL can be slightly different than lab-derived values. The reason that the field instrument data was used instead of the lab data is to maintain internal data consistency throughout each test. Therefore the gasoline yield values reported below are likely slightly different than those derived from lab data alone.

4.4 GASOLINE YIELD

Based upon the VES test data, initial gasoline extraction rates were determined for each well tested and are summarized in Table 4 and Figure 2. Gasoline extraction rates ranged between an estimated 20 and 28 pounds per day (lbs/day) per well.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the findings of this VES feasibility test, and subject to the limitations of this report, VET concludes the following:

1. Significant quantities of gasoline were extracted from the gasoline-affected soil using the VES. The stabilized initial daily yield ranged up to an estimated 28 lbs/day per well (4.2 gallons/day) of gasoline as vapor.
2. The subsurface at the site responded to vapor extraction which was evidenced by adequate extracted hydrocarbon concentrations in the extracted vapors.
3. Radii of influence for the well were generally moderate. However, ROI was variable in direction from the well head. This variability was apparently due to anisotropic vapor permeability conditions of the subsurface.
4. As a result of the test, an estimated 1.8 pounds (0.3 gallons) of gasoline were removed from the subsurface during a total of 105 minutes of extraction.

Based upon the above findings and conclusions, and subject to the limitations of this report, VET recommends that vapor extraction should be considered as an effective remediation option at this site.

6.0 LIMITATIONS

The environmental characterization and feasibility test program conducted at this site was based on existing site conditions and the geology/hydrogeology of the area. In performing such services, it is understood that a balance must be struck between a reasonable inquiry into the site conditions and each environmental characteristic or parameter. The following paragraphs discuss the assumptions and parameters under which the conclusions in this report are rendered.

No characterization or feasibility study is thorough enough to describe all geologic, hydrogeologic, or environmental conditions of possible interest at a given site. If conditions or parameters have not been identified during the characterization or test, such a finding should not therefore be construed as a guarantee of the absence of such conditions at the site, but rather as the result of the services performed within the scope, limitations, and monetary budget of the project.

Geologic, hydrogeologic, or environmental conditions may exist at the site that cannot be identified or quantified solely by visual observation or the testing performed at this site. Where subsurface exploratory work and/or testing was performed, our professional opinions and conclusions are based in part on interpretation of data from discrete sampling or measurement locations that may not represent actual conditions at unsampled or unmeasured locations.

VET is unable to report on, or accurately predict, events that may change the site conditions after the described services are performed, whether occurring naturally or caused by external forces. We assume no responsibility for conditions we were not authorized to evaluate, or conditions not generally recognized as predictable when the services were performed.

The services described in this report were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This report is solely for the use and information of our client unless otherwise noted. Any reliance on this report by a third party is at such party's sole risk.

Opinions and recommendations contained in this report apply to conditions existing when the services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of the services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

7.0 REFERENCES

State of California Air Resources Board (CARB), October 1986. Procedure for the Sampling and Analysis of Atmospheric Benzene, Method 102, Revision 1: page 5, in Hazardous Waste Disposal Site Testing Guidelines, January, 1987: California Air Resources Board.

South Coast Air Quality Management District (SCAQMD), June 6, 1991. Self Evaluation Permit Application: Engineering Department, South Coast Air Quality Management District, 9150 Flair Drive, El Monte, California 91731.

TABLES

TABLE 1
SUMMARY OF VAPOR EXTRACTION TEST DATA
 UNOCAL SERVICE STATION #4357
Vapor Extraction Technology, Inc.

WELL I.D. / DATE	TIME (24-HR)	O2 (%)	TPH (%LEL)	TPH (PPM)	VAC (IN.H2O)	FLOW (SCFM)	COMMENTS
VE-1 9-Sep-93	1020						START TEST
	1021	3.5	1		42	145	NO DILUTION. NO RECIRC.
	1022	3.2	1		42	145	
	1023	3.2	2		44	145	
	1024	3.2	2		44	145	
	1025	3.2	2	740	44	145	
	1030	3.5	3		44	145	
	1035	3.8	3		44	145	
	1040	4	3		44	145	
	1045	4.2	3		44	145	
	1050	4.4	3		44	145	
	1055	4.6	4		44	145	
	1100	4.9	4		44	145	
	1105						STOP. CHANGE SHEAVING TO INCREASE BLOWER SPEED
	1110						
	1115						
	1120	5.3	4		47	155	SAMPLED
	1125	5.3	4		48	155	
	1130	5.3	4		48	155	
	1135	5.3	4		48	155	
	1140	5.4	4		48	155	
	1145	5.7	4		48	155	
	1150	5.7	4		48	155	
	1205	6	4		48	155	
	1210	6.2	4		48	155	
	1215	6.2	4		48	155	SAMPLED STOP TEST
	1220						

TABLE 2
RADIUS OF INFLUENCE DATA AND RESULTS
 UNOCAL SERVICE STATION #4357
Vapor Extraction Technology, Inc.

EXTRACTION WELL OR WELL GROUP (DATE)	OBSERVATION WELL	TIME MEASURED (24-hour)	HORIZONTAL DISTANCE FROM NEAREST EXTRACTION WELL (feet)	INDUCED VACUUM (in. water)	ESTIMATED AVERAGE EFFECTIVE RADIUS OF INFLUENCE (feet)
VEW-1 (9/9/93)	VES UNIT	1023	0	40	14 to 44
	VP-1	1050	14	0.03	
	VP-2	1050	31	0.01	
	VP-3	1050	35	0.135	
	VP-4	1050	62	0.04	
VEW-1 (9/9/93)	VES UNIT	1210	0	48	15 to 46
	VP-1	1210	14	0.035	
	VP-2	1211	31	0.01	
	VP-3	1212	35	0.15	
	VP-4	1212	62	0.04	

TABLE 3
ANALYTICAL RESULTS OF VAPOR SAMPLES

UNOCAL SERVICE STATION #4357
Vapor Extraction Technology, Inc.

SAMPLE ID	MATRIX	DATE SAMPLED	TPH AS GASOLINE		LAB RESULTS				
			FIELD READING						
			(ppmv)	(mg/m3)	(ppmv)	(ppmv)	(ppmv)	(ppmv)	(ppmv)
			TPH calibrated to methane	TPH	TPH	BENZENE	ETHYL BENZENE	TOLUENE	TOTAL XYLENES
VEW-1-1	CHARCOAL	9/9/93	560	2,800	783	1.7	11	58	180
VEW-1-2	CHARCOAL	9/9/93	560	2,800	783	1.5	14	60	180

QA/QC: *JK*

NOTES

1. ND = not detected at or above lab detection limit; NS = not sampled for lab analysis; NA = not available or applicable.
2. Field readings obtained with VET's Gastech Model 1218 Explosimeter and %O2 Meter.
3. Vapor concentration conversions generally from the following standard formulas:

$$\text{mg/m}^3 = \frac{P \times \text{MW} \times \text{ppmv} \times 1000}{82.05 \times T}$$

where,

mg/m³ = milligrams per cubic meter of analyte

P = pressure in atmospheres

MW = molecular weight of analyte

ppmv = part per million by volume of analyte

82.05 = gas constant

T = absolute temperature in degrees K; room temp is 293 deg K

MW gasoline = 86, average (may vary with labs)

*Reference: CARB, 1986

$$\text{ppmv} = \% \text{LEL} \times 140$$

4. Lab samples analyzed by NIOSH methods 1501 modified and 1550 modified.

TABLE 4
SUMMARY OF VAPOR EXTRACTED GASOLINE

UNOCAL SERVICE STATION #4357
Vapor Extraction Technology, Inc.

End of test (date, time)	Extract. well ID	Duration of Test (min.)	Average Vacuum (Inches of Water)	Average Inlet Flow Rate (SCFM)	Average Inlet Concentration		Product Removal Rate Gasoline (lb/day)	Total Product Removed	
					%LEL	(ppmv as Gasoline)		Gasoline (lbs)	Cum. Gas (lbs)
9/9/93, 1100	VEW-1	45	44	145	3	420	19.9	0.6	0.6
9/9/93, 1220	VEW-1*	60	48	155	4	560	28.4	1.2	1.8
Total		105							
								total gallon equivalent:	
								0.3	

QA/QC jr

NOTES:

- Measurements of this table were obtained using standard VET VES procedures.
- Product removal rate and total pounds were calculated using the following standard* formula:

$$\text{lb/day} = \frac{\text{ppmv (60 min/hr)(24 hr/day)(SCFM)(86 lb/lb-mole)}}{(1,000,000)(379 \text{ ft}^3/\text{lb-mole})}$$

where, ppmv = concentration in parts per million by volume TPH as gasoline.

SCFM = vapor flow rate in standard cubic feet per minute.

86 lb/lb-mole = ave. molecular weight of gasoline. Benzene is 78.11.

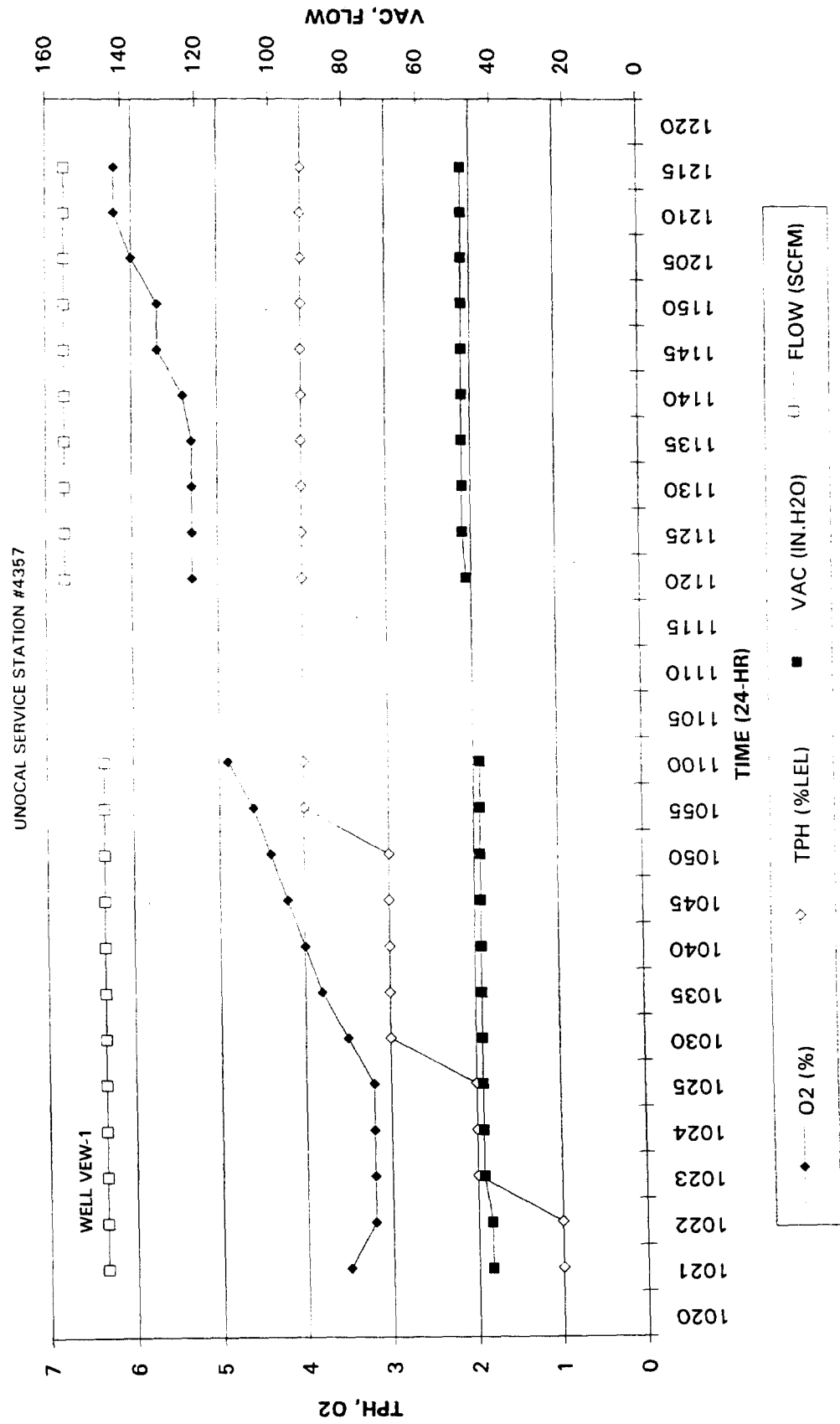
379 ft³/lb-mole = ideal gas constant.

*Reference: South Coast Air Quality Management District, 6/6/91.

- Gallons of product removed were calculated using: gasoline = 6.6 pounds/gallon.
- The mass calculations presented here are partly based upon field and lab procedures which are subject to improvements by VET.

FIGURES

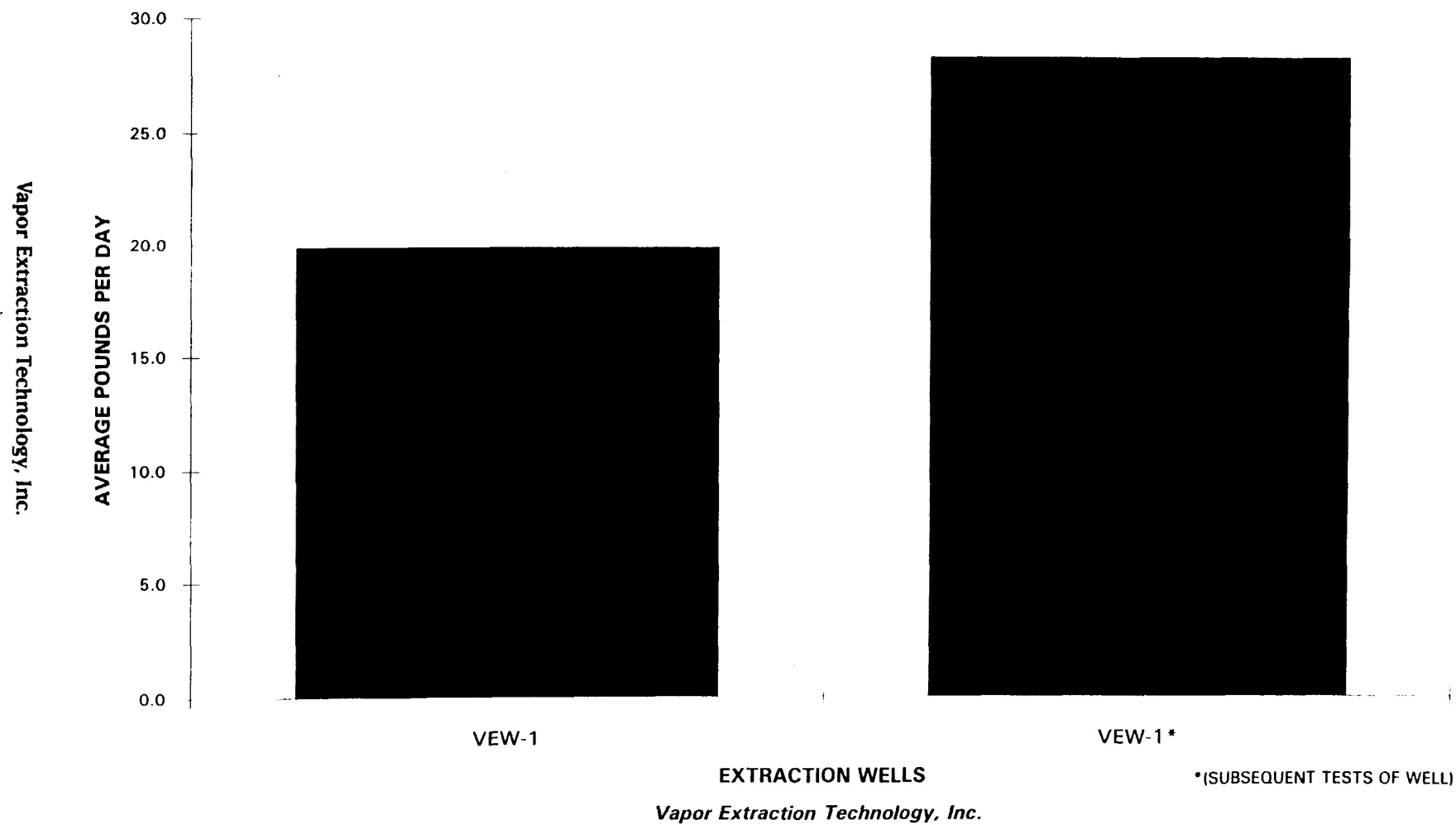
FIGURE 1. SUMMARY OF VES TEST DATA



Vapor Extraction Technology, Inc.

FIGURE 2. SUMMARY OF VAPOR EXTRACTED GASOLINE

UNOCAL SERVICE STATION #4357



APPENDIX A

Appendix A
Site Assessment
Maps and Tables

4

A-1

EXPLANATION:

- VE-1 Vapor Extraction Well - 1
- B-1 Soil Boring
- SB-1 Slant Soil Boring
- HB-2 Hand Auger Boring
- Slant Soil Boring Direction
- A-A' Geological Cross Section A-A'

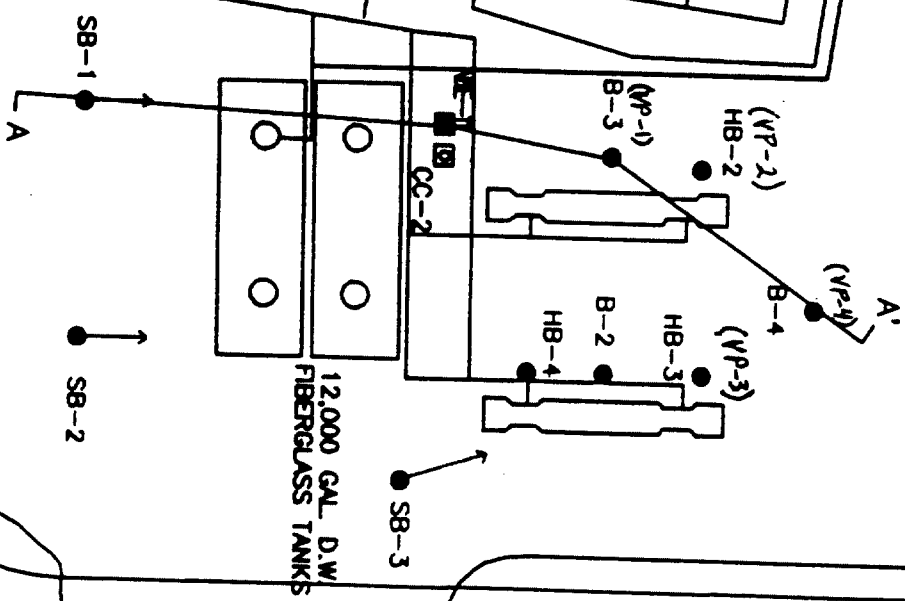
SCALE

0 19.3'



UNOCAL VAPOR EXTRACTOR
Ponding, Outlets

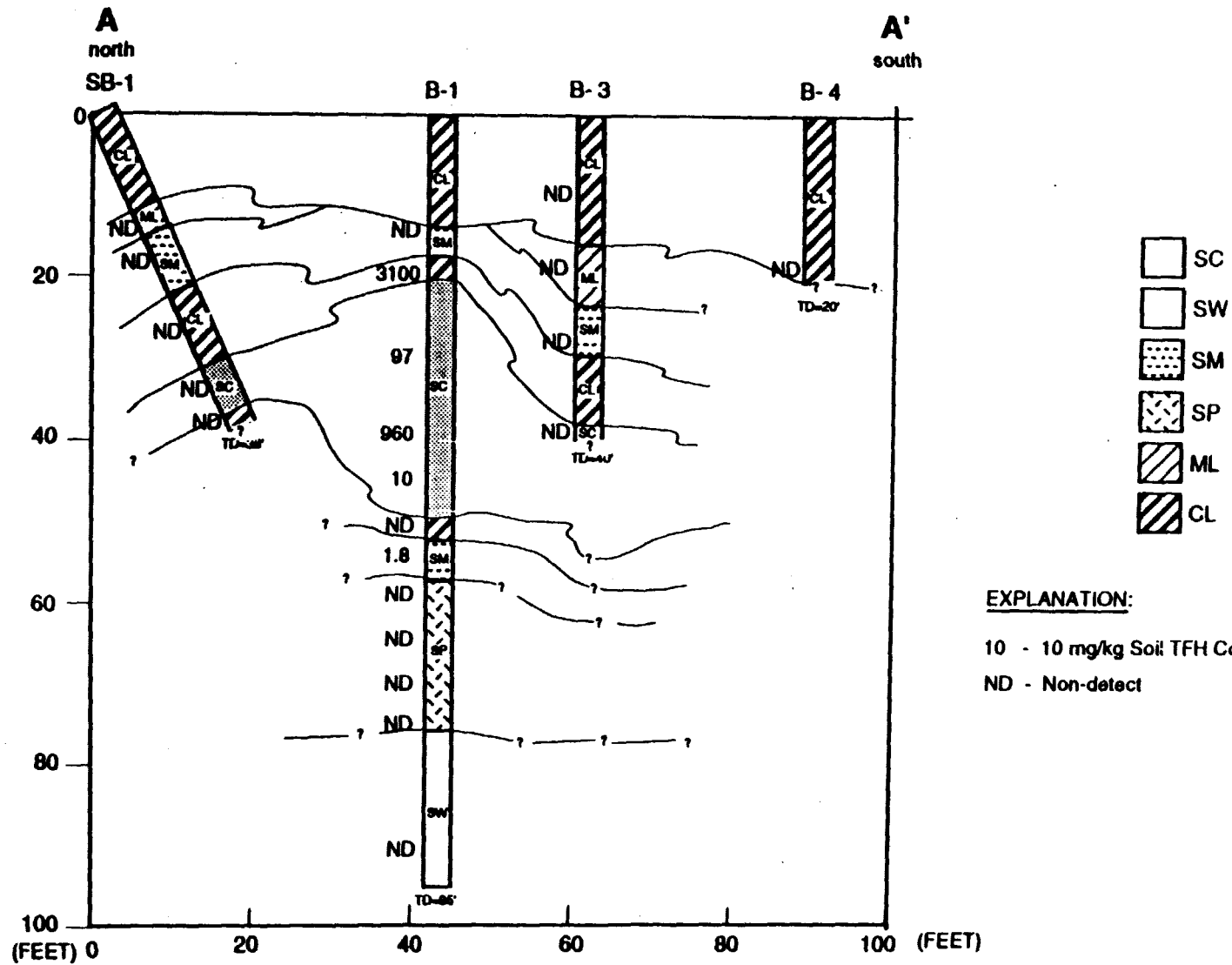
PL 195'



UNOCAL VAPOR EXTRACTOR & BORING
UNOCAL SERVICE STATION NO. 4367
Soil Boring Locations

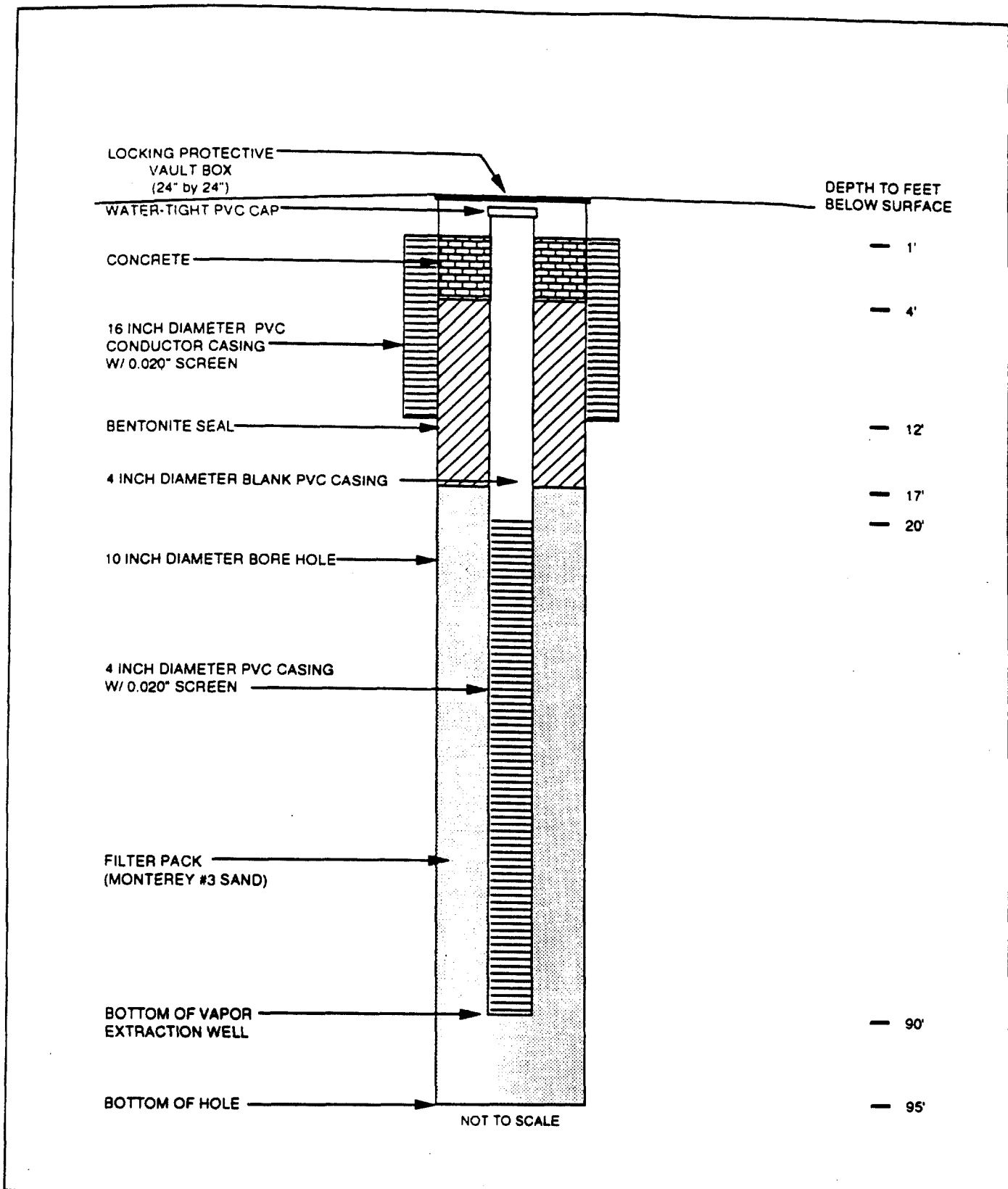
SAWTELLE BOULEVARD

A-2



Cross-Section A-A'
Unocal Station 4357

Figure 3



UNOCAL SERVICE STATION #4357
VAPOR EXTRACTION WELL VE-1
FIGURE 6

BORING NUMBER	<u>B-1</u>	CLIENT	<u>UNOCAL Marketing and Refining</u>
DATE DRILLED	<u>3/3/93</u>	PROJECT	<u>Service Station #4357</u>
		GEOLOGIST	<u>Manuel Saenz</u>

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
			6" of asphalt		
			LEAN CLAY, dark brown, moist, firm to stiff, 90% clay with medium plasticity, 15% silt, 5% coarse, subangular sand, micaceous. Contains minor amounts of fine, subangular gravel.	CL	Time = 0718 PID = 0.0 units No hydrocarbon odor
-5.0-					
-10-			LEAN CLAY, dark brown, moist, firm to stiff, 90% clay with medium plasticity, 15% silt, 5% coarse, subangular sand, micaceous. Contains minor amounts of fine, subangular gravel.	CL	
					Time = 0823 PID = 0.0 units
-15-		50-6	SILTY SAND WITH GRAVEL, brown to dark brown, moist, medium dense, 15% non-plastic silt, 30% fine sand, 40% medium, subangular sand, 15% fine to medium, subangular gravel.	SM	Time = 0839 PID = 35 units Recovery = 6" No hydrocarbon odor
-20-		5 20 28	SILTY SAND WITH GRAVEL, brown to dark brown, moist, medium dense, 10% clay with low plasticity, 25% non-plastic silt, 25% fine sand, 25% medium, subangular sand, 15% fine to medium, subangular gravel.	SM	Time = 0851 PID = 185 units Recovery = 13" Slight hydrocarbon odor
-25-					

METHOD OF DRILLING	<u>Hollow stem auger</u>	WELL DIAMETER	<u>4.0 inches</u>
HOLE DIAMETER	<u>10.0 inches</u>	WELL MATERIAL	<u>PVC-0.020" SCR</u>
COMPLETION DEPTH	<u>95 feet</u>	WELL DEVELOPMENT	<u>NA</u>

(A-4)

BORING NUMBER	B-1	CLIENT	UNOCAL Marketing and Refining
DATE DRILLED	3/3/93	PROJECT	Service Station #4357
		GEOLOGIST	Manuel Saenz

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
30		50-6	LEAN CLAY, dark brown, slightly moist, stiff 85% clay with low plasticity, 10% silt, 5% fine sand, mottled. Contains trace amounts of gray-brown discoloration.	CL	Driller notes hard drilling at 28' bgl. Time = 0900 PID = 172 units Recovery = 8" Moderate hydrocarbon odor (gasoline)
35			CLAYEY SAND, dark brown, moist, dense, 15% clay with low plasticity, 50% fine sand, 25% medium, subangular sand, 10% fine, subangular gravel.	SC	
40		28 50-5	CLAYEY SAND, brown to dark brown, moist, 40% clay with low to medium plasticity, 10% silt, 50% fine sand.	SC	Time = 0912 PID = 152 units Recovery = 15" Moderate to strong hydrocarbon odor (gasoline)
45		50-6	CLAYEY SAND, brown to dark brown, moist, 45% clay with low to medium plasticity, 50% fine sand, 5% fine, subangular gravel.	SC	Time = 1010 PID = 40 units Recovery = 8" Slight hydrocarbon odor
50		50-6	CLAYEY SAND, brown to dark brown, moist, 25% clay with low to medium plasticity, 55% fine sand, 20% fine to coarse, subangular gravel.	SC	Time = 1031 PID = 22 units Recovery = 15" Slight hydrocarbon odor

METHOD OF DRILLING	<u>Hollow stem auger</u>	WELL DIAMETER	<u>4.0 inches</u>
HOLE DIAMETER	<u>10.0 inches</u>	WELL MATERIAL	<u>PVC-0.020" SCR</u>
COMPLETION DEPTH	<u>95 feet</u>	WELL DEVELOPMENT	<u>NA</u>

A-5

BORING NUMBER B-1 CLIENT UNOCAL Marketing and Refining
 DATE DRILLED 3/3/93 PROJECT Service Station #4357
 GEOLOGIST Manuel Saenz/Dan Johnson

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
		50-6	CLAYEY SAND, brown to dark brown, moist, 25% clay with low to medium plasticity, 55% fine sand, 20% fine to coarse, subangular gravel.	SC	Time = 1031 PID = 22 units Recovery = 15" Slight hydrocarbon odor
55		50-6	LEAN CLAY, light brown, slightly moist to moist, stiff 70% clay with low plasticity, 30% silt, slightly oxidized, micaceous.	CL	Time = 1038 PID = 15.2 units Recovery = 7" No hydrocarbon odor
			SILTY SAND, brown to dark brown, moist, dense, 15% silt, 70% fine sand, 5% medium, subangular sand, 10% fine, subangular gravel.	SM	
60		9 17 22	SAND, light brown, moist, medium dense, 10% non-plastic silt, 90% very fine to fine sand.	SP	Time = 1038 PID = 24 units Recovery = 7" Slight hydrocarbon odor
65		10 27 36	SAND, light yellow-brown, moist, dense, 15% non-plastic silt, 80% fine sand, 5% medium, subrounded sand. Contains trace amounts of dark brown silt nodules.	SP	Time = 1035 PID = 32 units Recovery = 10" Slight hydrocarbon odor
70		17 50	SAND, light yellow-brown, moist, very dense, 15% non-plastic silt, 80% fine sand, 5% medium, subrounded sand. Contains trace amounts of dark brown silt nodules.	SP	Time = 1115 PID = 5 units Recovery = 12" No hydrocarbon odor
75		9 28 35	SAND, yellow-brown, moist, dense, 75% fine sand, 25% medium, subrounded sand. Contains trace amounts of coarse, subrounded sand.	SP	Time = 1130 PID = 18 units Recovery = 14" No hydrocarbon odor

METHOD OF DRILLING
 HOLE DIAMETER
 COMPLETION DEPTH

Hollow stem auger
10.0 inches
95 feet

WELL DIAMETER
 WELL MATERIAL
 WELL DEVELOPMENT

4.0 inches
PVC 0.020" SCR
NA

A-6

BORING NUMBER B-1 CLIENT UNOCAL Marketing and Refining
 DATE DRILLED 3/3/93 PROJECT Service Station #4357
 GEOLOGIST Manuel Saenz/Dan Johnson

Depth in Feet	Sampling Interval	Blow Counts	DESCRIPTION	USCS SYMBOL	REMARKS
		9 28 35	SAND, yellow-brown, moist, dense, 75% fine sand, 25% medium, subrounded sand. Contains trace amounts of coarse, subrounded sand.	SP	Time = 1130 PID = 18 units Recovery = 14" No hydrocarbon odor
80		28 50- 6	SAND, orange-brown, moist, very dense, 35% fine sand, 30% medium, subangular to subrounded sand 20% coarse, subrounded sand, 15% fine, subrounded to rounded gravel. Contains trace amounts of brown, fine sand nodules.	SW	Time = 1150 PID = 38 units Recovery = 16" Slight hydrocarbon odor
85		18 22 25	SAND, orange-brown, moist, medium dense, 30% fine sand, 40% medium, subrounded sand 20% coarse, subrounded sand, 10% fine, subrounded to rounded gravel. Contains trace amounts of brown, fine sand nodules.	SW	Time = 1200 PID = 12 units Recovery = 16" Slight hydrocarbon odor
90		19 25 32	SAND, orange-brown, moist, medium dense, 30% fine sand, 40% medium, subrounded sand 20% coarse, subrounded sand, 10% fine, subrounded to rounded gravel. Contains trace amounts of brown, fine sand nodules.	SW	Time = 1210 PID = 18 units Recovery = 12" Slight hydrocarbon odor
95		19 25 32	SAND, orange-brown, moist, medium dense, 30% fine sand, 40% medium, subrounded sand 20% coarse, subrounded sand, 10% fine, subrounded to rounded gravel. Contains trace amounts of brown, fine sand nodules.	SW	Time = 1220 PID = 15 units Recovery = 14" Slight hydrocarbon odor
			BOTTOM OF HOLE		
100			Groundwater not encountered.		

METHOD OF DRILLING Hollow stem auger WELL DIAMETER 4.0 inches
 HOLE DIAMETER 10.0 inches WELL MATERIAL PVC-0.020" SCR
 COMPLETION DEPTH 95 feet WELL DEVELOPMENT NA

(A-7)

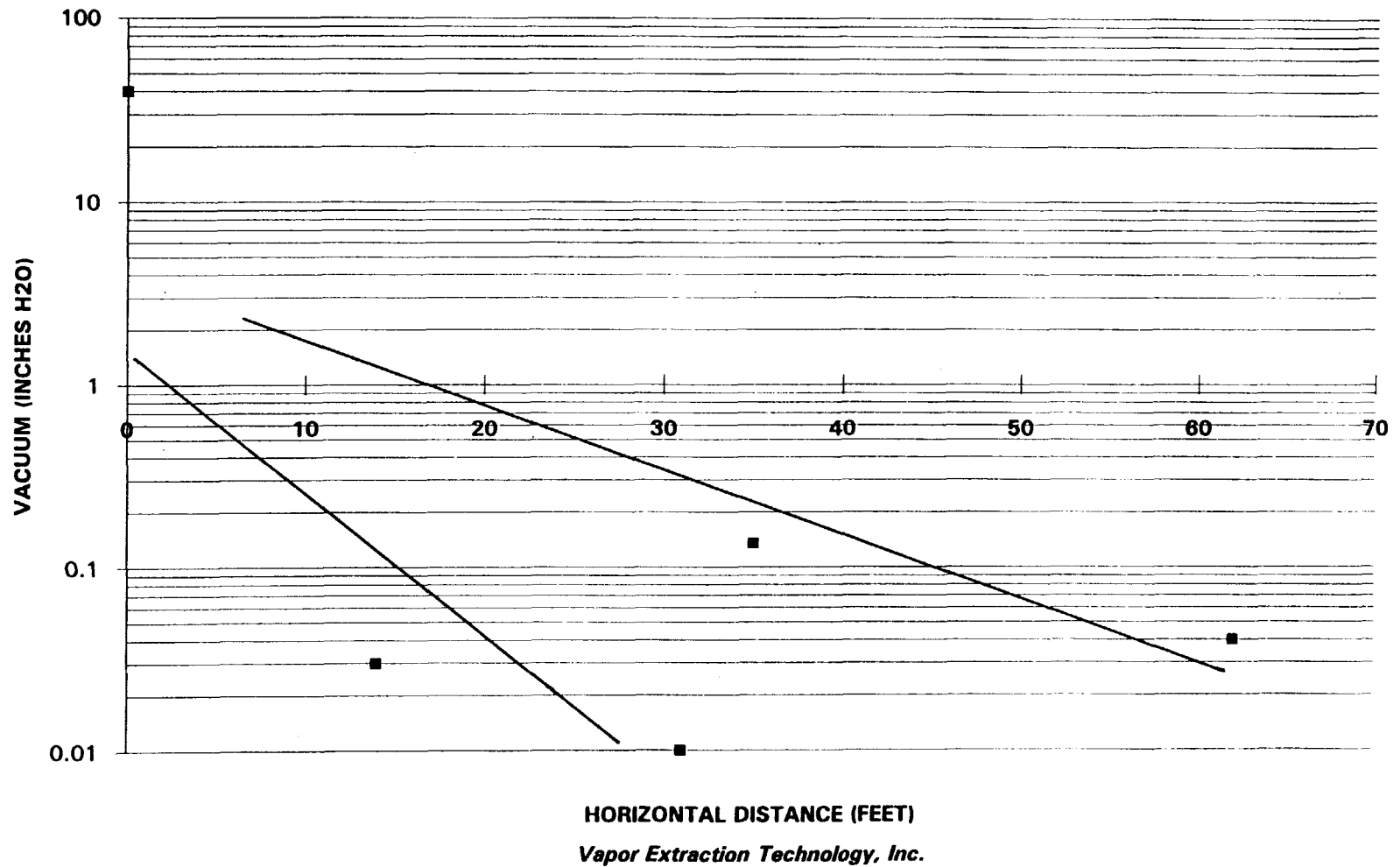
APPENDIX B

Appendix B

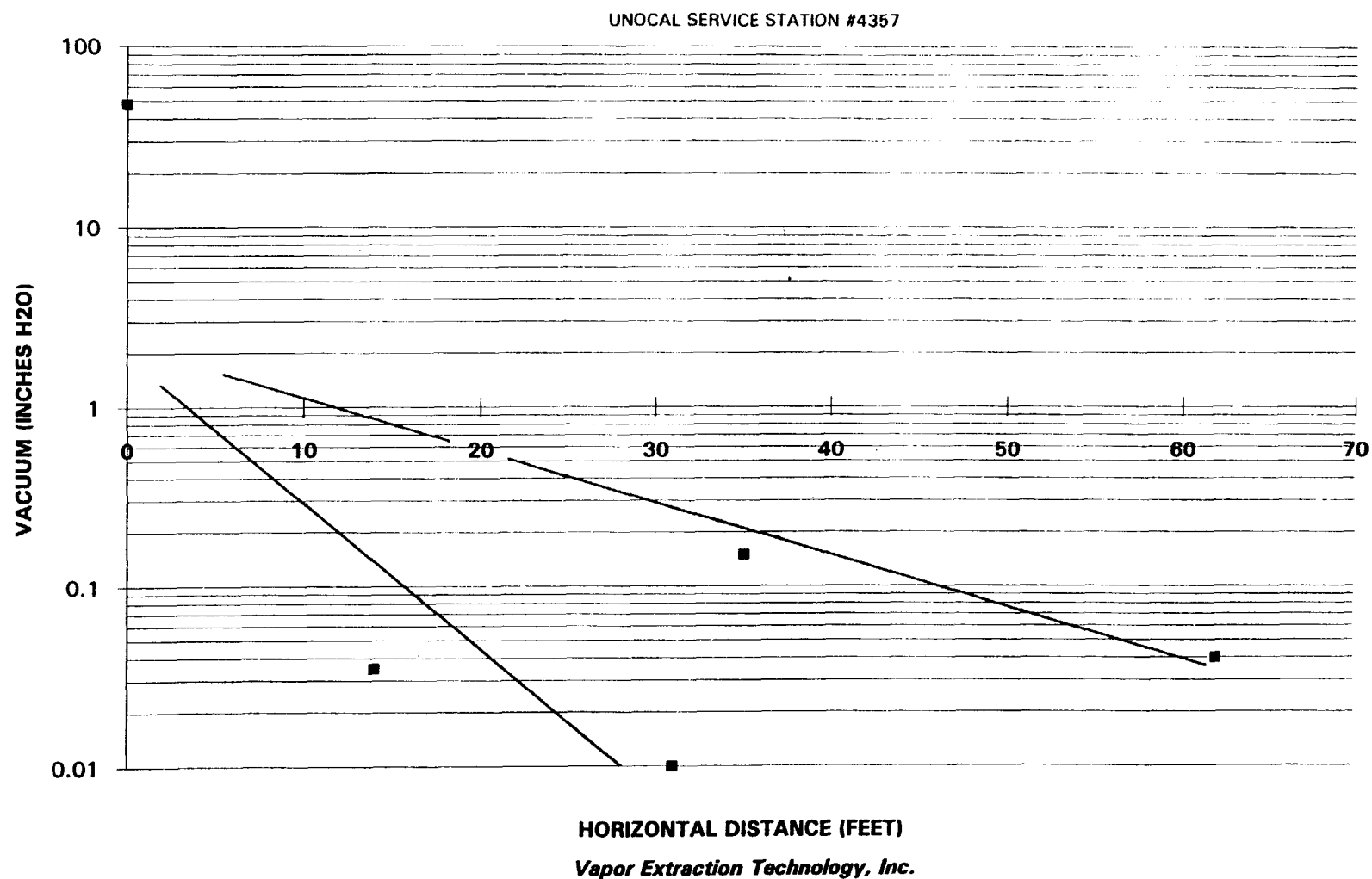
Radius of Influence Graphs

RADIUS OF INFLUENCE: WELL VEW-1, 40 INCHES APPLIED VACUUM

UNOCAL SERVICE STATION #4357



RADIUS OF INFLUENCE: WELL VEW-1, 48 INCHES APPLIED VACUUM



APPENDIX C

Appendix C
Laboratory Report

RECEIVED SEP 20 1993

Western Operations

1252 Quarry Lane
P.O. Box 9019
Pleasanton, CA 94566
(510) 426-2600
Fax (510) 426-0106

Clayton
ENVIRONMENTAL
CONSULTANTS

September 17, 1993

Mr. Tom Lahey
VAPOR EXTRACTION TECHNOLOGY
1062 Calle Negocio
San Clemente, CA 92672

Client Ref. Ves Feasibility
Clayton Project No. 93090.91

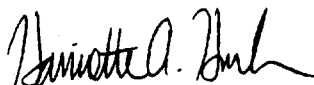
Dear Mr. Lahey:

Enclosed are our analytical laboratory report and chromatograms for the samples received on September 10, 1993. A copy of the Chain-of-Custody form acknowledging receipt of these samples is attached.

Please note that any unused portion of the samples will be disposed of 30 days after the date of this report, unless you have requested otherwise.

We appreciate the opportunity to be of assistance to you. If you have questions, please contact Suzanne Silvera, Client Services Supervisor, at (510) 426-2657.

Sincerely,



Harriotte A. Hurley, CIH
Manager, Laboratory Services
Western Operations

HAH/tb

Attachments

(C-1)

Results of Analysis
for
Vapor Extraction Technology

Client Reference: VES FEASIBILITY
Clayton Project No. 93090.91

Sample Identification:	See below	Date Sampled:	09/09/92
Lab Number:	9309091	Date Received:	09/10/93
Sample Matrix/Media:	LG_CHAR_TUBE	Date Prepared:	09/14/93
Analytical Method:	See Below	Date Analyzed:	09/14/93

Lab No.	Sample I.D.	Sample Volume (liters)	Compound	Front (mg)	Back (mg)	Total (mg)	Concentration (mg/m3)	(ppm)
-01	VEW-1-1	4	Benzene	0.022	<0.004	0.022	5.5	1.7
			Ethyl benzene	0.19	<0.004	0.19	48	11
			Toluene	0.88	<0.004	0.88	220	58
			TPH* as Gasoline	11	<0.1	11	2800	—
			Xylenes	3.1	<0.01	3.1	780	180
-02	VEW-1-2	4	Benzene	0.019	<0.004	0.019	4.8	1.5
			Ethyl benzene	0.24	<0.004	0.24	60	14
			Toluene	0.90	<0.004	0.90	230	60
			TPH* as Gasoline	11	<0.1	11	2800	—
			Xylenes	3.1	<0.01	3.1	780	180
-03	METHOD BLANK	—	Benzene	<0.004	<0.004	<0.004	—	—
			Ethyl benzene	<0.004	<0.004	<0.004	—	—
			Toluene	<0.004	<0.004	<0.004	—	—
			TPH* as Gasoline	<0.1	<0.1	<0.1	—	—
			Xylenes	<0.01	<0.01	<0.01	—	—

< = Less than the indicated limit of detection (LOD)

— = Information not available or not applicable

Airborne concentrations are based on the air volumes provided.

Results have been corrected using laboratory-derived desorption efficiencies

* Total Petroleum Hydrocarbons

Compound	Limit of Detection (mg)	Analytical Method
Benzene	0.004	NIOSH 1501 (Modified)
Ethyl benzene	0.004	NIOSH 1501 (Modified)
Toluene	0.004	NIOSH 1501 (Modified)
TPH* as Gasoline	0.1	NIOSH 1550 (Modified)
Xylenes	0.01	NIOSH 1501 (Modified)

4309091

FAX (714) 492-7611

Project ID: VE3 Feasibility
Location: UNOCAL 4357 11280 National
Sampling Date: 9/9/93
Sampler(s): TL/DSID

Sample I.D.	Sampling Time	Sampling Location	Laboratory Analyses	Comments
VIEW-1-1	1130-1132	VIEW 1	BTEX/TPH as per	4 Liter Sample CH
VIEW 1-2	1215-1217	VIEW 1	"	" 4 Liter Sample CH

PLEASE INCLUDE CHROMATOGRAMS
5 DAY TAT Per Ron Peters

Relinquished
by: Romas R. Gale Date/Time: 9/9/93 430 PM
Received
by: _____ Date/Time: _____

Received at LAB
by: Terry Selver Date/Time: 9/10/93 10:15a

Shipped via: FED EXPRESS COURIER HAND CARRIED

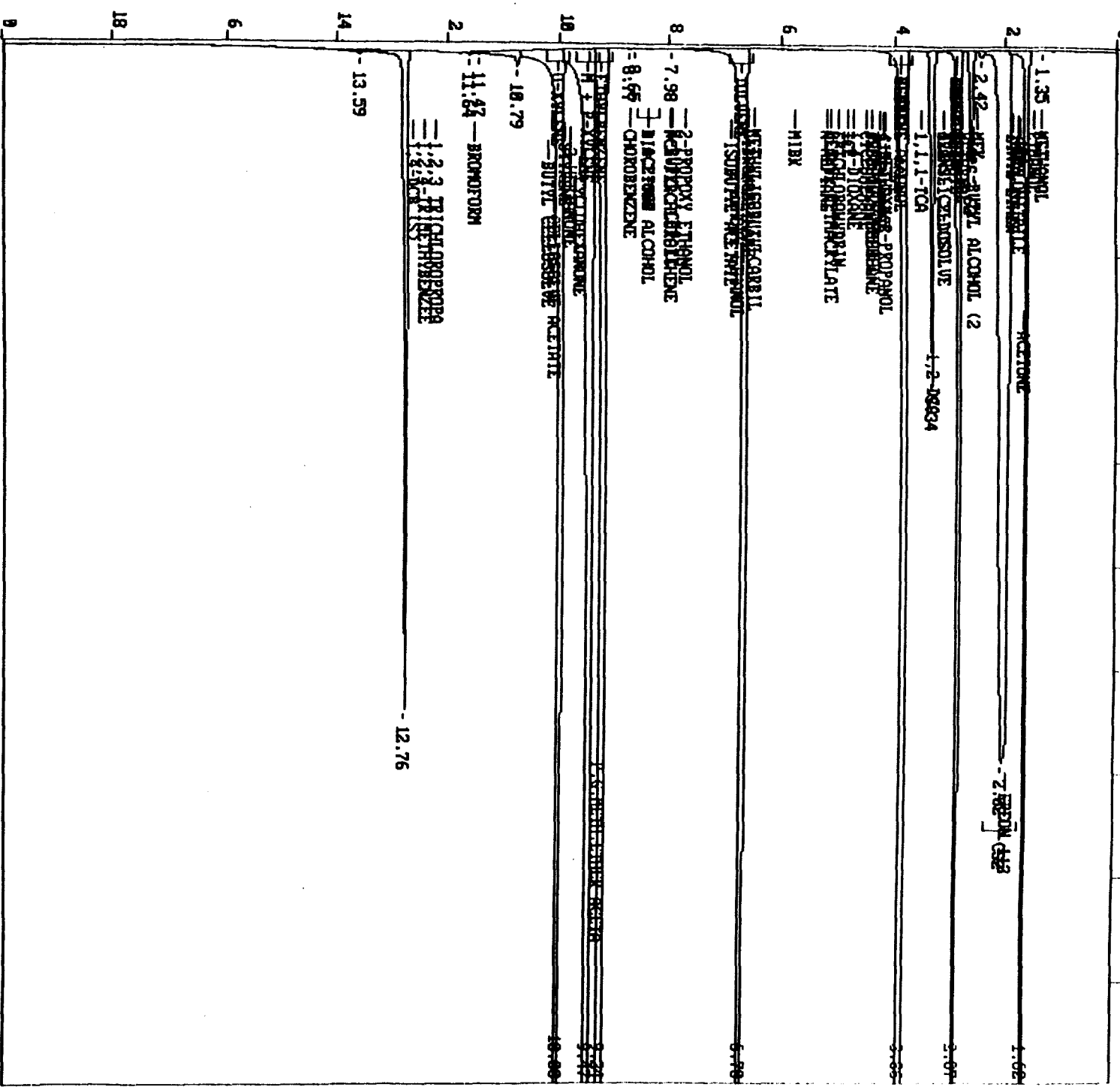
CLAYTON ENVIRONMENTAL CONSULTANTS, INC.

SAMPLE CHROMATOGRAM INDEX

CLAYTON WORKORDER NO. 9309091

Page Number	Sample Name From Chromatogram (Lab No.)	Sample ID.
	First Column	
1-2	Btex Standard Check	
3-5	Gasoline Standard Check	
6-7	9309091-Method Blank	
8-9	9309091-01A Back	VEW-1-1
10-12	9309091-01A Front	VEW-1-1
13-14	9309091-02A Back	VEW-1-2
15-17	9309091-02A Front	VEW-1-2
	Second Column	
18-19	Btex Standard Check	
20-21	9309091-Method Blank	
22-23	9309091-01A Back	VEW-1-1
24-26	9309091-01A Front	VEW-1-1
27-28	9309091-02A Back	VEW-1-2
29-31	9309091-02A Front	VEW-1-2

C-4



(C-5)

09-14-1993_13:01:51

Sample Name: G930908-01S 20X

Date: 09-14-1993 13:00:58

Dilution Factor: 1

Operator: WS

Sample Weight: 1

Instrument: HP-5890 #05129

EXTERNAL STD Calibrated

Area Rejected: 10

Data File: M:\CP\GC-2\G141.04R Cycle# 4

Method File: M:\CP\GC-2\GIH.MET..ver# 183. 09/14/93 07:49:50

Calibr File: M:\CP\GC-2\GIH.CAL..ver# 651. 09/14/93 07:52:02

Analysis: IND HYG / DB-5 30M / 40C(4')8C/M 180C

Misc1. TEMP 40' 4' 8DEG/MIN 170'

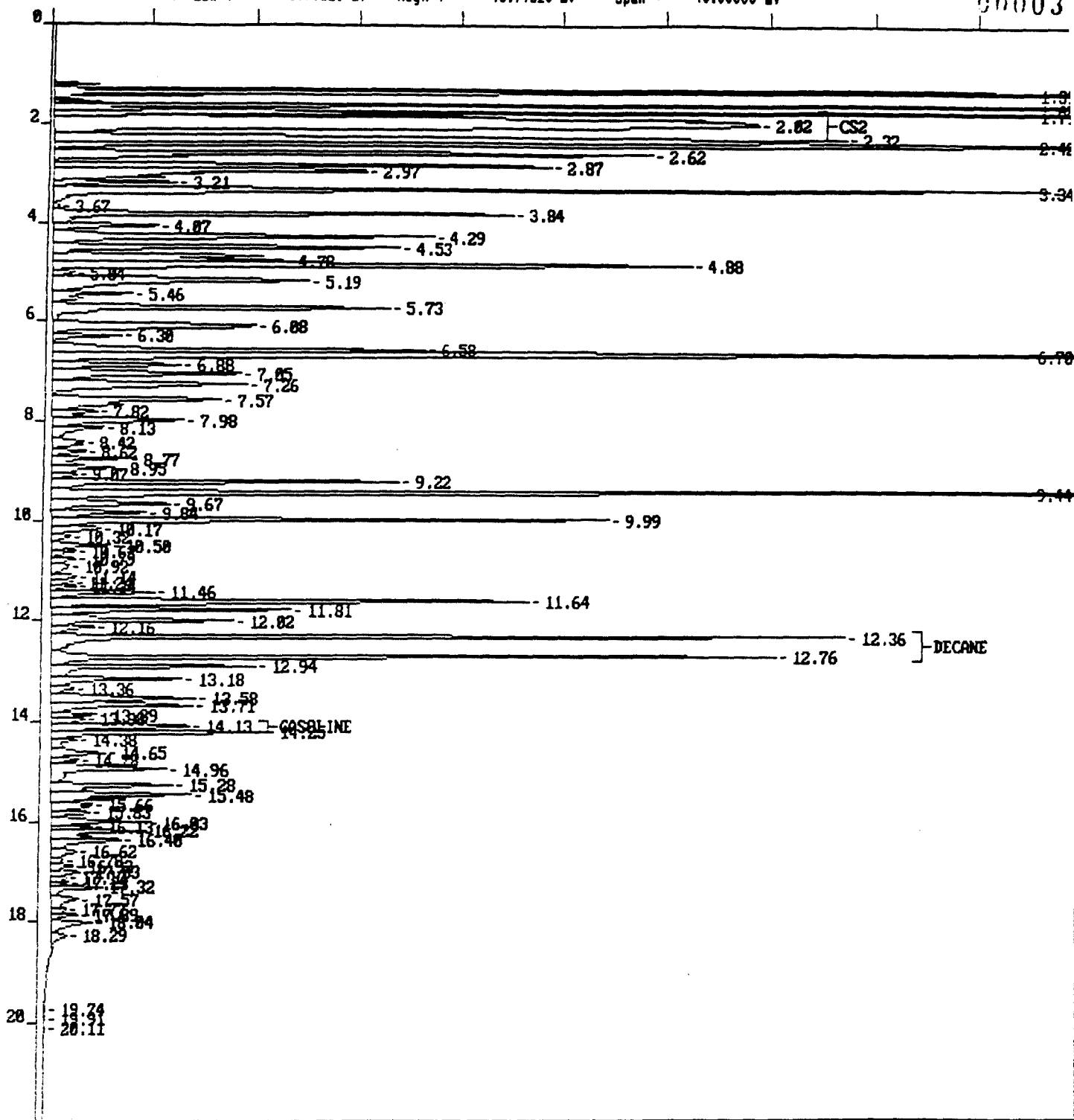
Ret	Relative Ret Time	Peak Name	Amount	Grp	Peak	Peak	Peak	Ref	Amount	
k#	Ret	Ret Time (min)	MG	Num	Area	Type	Height	Pk	/Area	% Recovery
1	0.00%	0.000	1.353	0.0000	0	90	BB	15	0.0000E+00	
2	0.00%	0.000	1.620	0.0000	0	223706	BV	140968	0.0000E+00	
3	-0.82%	0.000	2.021 CS2	0.0000	0	306600	VV	27509	0.0000E+00	
4	0.00%	0.000	2.421	0.0000	0	1461	VV	258	0.0000E+00	
5	0.00%	0.000	2.622	0.0000	0	15607	VV	4314	0.0000E+00	
6	0.00%	0.000	2.872	0.0000	0	325110	VV	105309	0.0000E+00	
7	0.00%	0.000	3.340	0.0000	0	43341	VV	12693	0.0000E+00	
8	-0.86%	0.000	3.858 BENZENE	0.4411	0	549480	VB	150867	0.8028E-06	102%
9	-0.50%	0.000	6.697 TOLUENE	0.4411	0	531077	BV	159663	0.8307E-06	102%
10	0.00%	0.000	7.983	0.0000	0	528	VV	36	0.0000E+00	
11	0.00%	0.000	8.651	0.0000	0	93	VV	18	0.0000E+00	
12	0.00%	0.000	8.767	0.0000	0	262	VB	59	0.0000E+00	
13	-0.18%	0.000	9.235 ETHYLBENZENE	0.4548	0	510715	BV	155122	0.8904E-06	105%
14	-0.18%	0.000	9.469 M + P-XYLENE	0.8895	1	1029716	VV	249087	0.8638E-06	3103%
15	-0.33%	0.000	10.003 O-XYLENE	0.4509	1	529793	VV	163403	0.8512E-06	
16	0.00%	0.000	10.788	0.0000	0	8204	VV	609	0.0000E+00	
17	0.00%	0.000	11.473	0.0000	0	736	VV	93	0.0000E+00	
18	0.00%	0.000	11.640	0.0000	0	839	VB	128	0.0000E+00	
19	0.00%	0.000	12.759	0.0000	0	83249	SBB	25218	0.0000E+00	
20	0.00%	0.000	13.594	0.0000	0	1098	TVB	105	0.0000E+00	

Group	Group Amount	Group Percent
0	1.3370	49.9362%
1	1.3404	50.0638%

Total Amount = 2.677479, Total Area = 4161703

C-6

00003



* DATE: 09-14-1993 13:28:54
* RAW DATA FILE NAME: M:\CF\GC-2\G141.05R
* SAMPLE NAME: G930907-015 20X
* SAMPLE WEIGHT: 1
* DILUTION FACTOR: 1
* CALIBRATION FILE: M:\CF\GC-2\GAS.CAL
* METHOD FILE: M:\CF\GC-2\GAS.MET
* INSTRUMENT: HP5890HP-5890 #05129-I.D.# 05129 OPERATOR: WS

***** PEAKS DETECTED IN THIS CHROMATOGRAM *****

Peak Ret Time % Delta Amount mg Peak Name
RESPONSE

1	1.386	0.00%	0.2061	216235	118585	0	19	0.9531E-06	FACTOR
2	1.653	0.00%	0.3052	320161	159944	0	19	0.9531E-06	Peak
3	1.787	0.00%	0.1365	143168	55430	0	19	0.9531E-06	Group Int Std
4	2.021	0.00%	0.0000	376611	27532	0	19	0.0000E+00	Peak
5	2.321	0.00%	0.1799	188711	30911	0	19	0.9531E-06	Area
6	2.421	0.00%	0.1955	205157	42211	0	19	0.9531E-06	Height
7	2.622	0.00%	0.0958	100549	23447	0	19	0.9531E-06	Nu
8	2.872	0.00%	0.0669	70174	19440	0	19	0.9531E-06	Peak
9	2.973	0.00%	0.0815	85491	12266	0	19	0.9531E-06	Area
10	3.206	0.00%	0.0149	15683	4865	0	19	0.9531E-06	Height
11	3.340	0.00%	0.1448	151934	38742	0	19	0.9531E-06	Nu
12	3.674	0.00%	0.0010	999	236	0	19	0.9531E-06	Peak
13	3.841	0.00%	0.0741	77712	17937	0	19	0.9531E-06	Group Int Std
14	4.075	0.00%	0.0174	18234	4164	0	19	0.9531E-06	Area
15	4.292	0.00%	0.0772	80952	14835	0	19	0.9531E-06	Height
16	4.526	0.00%	0.0529	55521	13538	0	19	0.9531E-06	Nu
17	4.776	0.00%	0.0634	66508	8924	0	19	0.9531E-06	Peak
18	4.876	0.00%	0.1099	115268	24926	0	19	0.9531E-06	Area
19	5.043	0.00%	0.0031	3224	850	0	19	0.9531E-06	Height
20	5.194	0.00%	0.0643	67435	9991	0	19	0.9531E-06	Nu
21	5.461	0.00%	0.0162	17013	3179	0	19	0.9531E-06	Peak
22	5.728	0.00%	0.0595	62464	13138	0	19	0.9531E-06	Group Int Std
23	6.079	0.00%	0.0547	57398	7926	0	19	0.9531E-06	Area
24	6.296	0.00%	0.0107	11273	2746	0	19	0.9531E-06	Height
25	6.580	0.00%	0.0625	65548	14492	0	19	0.9531E-06	Nu
26	6.697	0.00%	0.2189	229641	63047	0	19	0.9531E-06	Peak
27	6.880	0.00%	0.0210	22072	5061	0	19	0.9531E-06	Area
28	7.047	0.00%	0.0391	41005	7303	0	19	0.9531E-06	Height
29	7.265	0.00%	0.0486	51010	7578	0	19	0.9531E-06	Nu
30	7.565	0.00%	0.0444	46615	6583	0	19	0.9531E-06	Peak
31	7.816	0.00%	0.0105	10997	1815	0	19	0.9531E-06	Group Int Std
32	7.983	0.00%	0.0255	26784	5175	0	19	0.9531E-06	Area
33	8.133	0.00%	0.0124	13045	2050	0	19	0.9531E-06	Height
34	8.417	0.00%	0.0100	10518	1287	0	19	0.9531E-06	Nu
35	8.617	0.00%	0.0064	6664	1358	0	19	0.9531E-06	Peak
36	8.767	0.00%	0.0146	15282	3017	0	19	0.9531E-06	Area
37	8.951	0.00%	0.0116	12163	2492	0	19	0.9531E-06	Height
38	9.068	0.00%	0.0057	5988	992	0	19	0.9531E-06	Nu
39	9.218	0.00%	0.0459	48202	13448	0	19	0.9531E-06	Peak
40	9.436	0.00%	0.1839	192977	48685	0	19	0.9531E-06	Group Int Std
41	9.669	0.00%	0.0250	26269	4644	0	19	0.9531E-06	Area
42	9.836	0.00%	0.0167	17541	3719	0	19	0.9531E-06	Height

0.8

00005

10.821	0.00%	0.0040	4425	761	0	19	0.9531E-06
10.788	0.00%	0.0042	5274	591	0	19	0.9531E-06
10.922	0.00%	0.0060	4992	1004	0	19	0.9531E-06
50 11.139	0.00%	0.0048	3940	848	0	19	0.9531E-06
11.259	0.00%	0.0038	3736	986	0	19	0.9531E-06
11.339	0.00%	0.0036	16725	4039	0	19	0.9531E-06
53 11.456	0.00%	0.0159	81838	13511	0	19	0.9531E-06
54 11.640	0.00%	0.0780	31613	9271	0	19	0.9531E-06
11.807	0.00%	0.0301	34715	7037	0	19	0.9531E-06
12.024	0.00%	0.0331	8878	1726	0	19	0.9531E-06
57 12.158	0.00%	0.0085	104907	30709	0	19	0.0000E+00
12.358	-1.17%	0.0000	93228	28072	0	19	0.9531E-06
12.759	0.00%	0.0889	31968	7899	0	19	0.9531E-06
60 12.943	0.00%	0.0305	20292	5073	0	19	0.9531E-06
13.176	0.00%	0.0193	5354	892	0	19	0.9531E-06
13.360	0.00%	0.0051	28136	5599	0	19	0.9531E-06
63 13.577	0.00%	0.0268	30273	5497	0	19	0.9531E-06
64 13.711	0.00%	0.0289	7692	1815	0	19	0.9531E-06
13.894	0.00%	0.0073	7210	1313	0	19	0.9531E-06
66 13.978	0.00%	0.0069	29958	5374	0	19	0.9531E-06
67 14.128	0.09%	0.0286	30166	8223	0	19	0.9531E-06
14.245	0.00%	0.0288	7175	996	0	19	0.9531E-06
14.379	0.00%	0.0068	10922	2113	0	19	0.9531E-06
70 14.646	0.00%	0.0104	4972	1091	0	19	0.9531E-06
7 14.779	0.00%	0.0047	30917	4494	0	19	0.9531E-06
7 14.963	0.00%	0.0295	22605	4757	0	19	0.9531E-06
73 15.280	0.00%	0.0215	32193	5422	0	19	0.9531E-06
74 15.481	0.00%	0.0307	12277	1645	0	19	0.9531E-06
7 15.665	0.00%	0.0117	7347	1547	0	19	0.9531E-06
76 15.832	0.00%	0.0070	18428	3704	0	19	0.9531E-06
77 16.032	0.00%	0.0176	6267	1632	0	19	0.9531E-06
7 16.132	0.00%	0.0060	20314	3347	0	19	0.9531E-06
7 16.216	0.00%	0.0194	15992	2765	0	19	0.9531E-06
80 16.399	0.00%	0.0152	7222	992	0	19	0.9531E-06
8 16.616	0.00%	0.0069	2481	485	0	19	0.9531E-06
8 16.783	0.00%	0.0024	4391	870	0	19	0.9531E-06
83 16.917	0.00%	0.0042	5945	1129	0	19	0.9531E-06
84 17.034	0.00%	0.0057	3180	612	0	19	0.9531E-06
8 17.134	0.00%	0.0030	2649	670	0	19	0.9531E-06
86 17.234	0.00%	0.0025	8320	1685	0	19	0.9531E-06
87 17.318	0.00%	0.0079	9059	1073	0	19	0.9531E-06
81 17.568	0.00%	0.0086	3493	565	0	19	0.9531E-06
84 17.769	0.00%	0.0033	4222	1050	0	19	0.9531E-06
90 17.886	0.00%	0.0040	10829	1633	0	19	0.9531E-06
91 18.036	0.00%	0.0103	4498	634	0	19	0.9531E-06
91 18.286	0.00%	0.0043	183	31	0	19	0.9531E-06
93 19.739	0.00%	0.0002	182	33	0	19	0.9531E-06
94 19.906	0.00%	0.0002	361	52	0	19	0.9531E-06
95 20.107	0.00%	0.0003					

Group Group Amount Group Percent
0 3.6398 100.0000%

TOTAL AREA = 4300285

TOTAL AMOUNT DETECTED = 3.639849 100%

(69)

Mayton Environmental Consultants, Pleasanton, California

00007

09-14-1993_14:24:04

Sample Name: 9309089/91-MB

Date: 09-14-1993 14:23:14
Operator: WS

Dilution Factor: 1
Sample Weight: 1

Instrument: HP-5890 #05129
EXTERNAL STD Calibrated

Area Rejected: 10

Data File: M:\CP\GC-2\G141.07R Cycle# 7

Method File: M:\CP\GC-2\GIH.MET..ver# 183. 09/14/93 07:49:50

Calibr File: M:\CP\GC-2\GIH.CAL..ver# 652. 09/14/93 14:19:56

Analysis: IND HYG / DB-5 30M / 40C(4')8C/M 180C

iscl. TEMP 40' 4' 8DEG/MIN 170'

#	Ret	Ret Time	(min)	Peak Name	Amount MG	Grp Num	Peak Area	Peak Type	Peak Height	Ref Pk	Amount /Area	% Recovery
1	0.00%	0.000	1.169		0.0000	0	68	BB	25		0.0000E+00	
2	0.00%	0.000	1.637		0.0000	0	146	BB	39		0.0000E+00	
3	3.68%	0.000	1.787	IPA	0.0002	0	105	BV	47		0.1791E-05	
4	-0.82%	0.000	2.021	CS2	0.0000	0	304973	VB	27660		0.0000E+00	
5	-1.29%	0.000	3.841	BENZENE	0.0007	0	832	BB	225		0.8028E-06	
6	0.00%	0.000	12.024		0.0000	0	68	BB	17		0.0000E+00	
7	0.00%	0.000	12.158		0.0000	0	98	BB	13		0.0000E+00	
8	0.00%	0.000	12.775		0.0000	0	74072	BB	22856		0.0000E+00	

Group	Group Amount	Group Percent
0	0.0009	100.0000%
1	0.0000	0.0000%

Total Amount = 8.564029E-04, Total Area = 380362.7

C-11

09-14-1993 15:46:11

Sample Name: 9309091-01A B

Date: 09-14-1993 15:45:22

Dilution Factor: 1

Operator: WS

Sample Weight: 1

Instrument: HP-5890 #05129

Area Rejected: 10

EXTERNAL STD Calibrated

Data File: M:\CP\GC-2\G141.10R Cycle# 10

Method File: M:\CP\GC-2\G1H.MET..ver# 183. 09/14/93 07:49:50

Calibr File: M:\CP\GC-2\G1H.CAL..ver# 652. 09/14/93 14:19:56

Analysis: IND HYG / DB-5 30M / 40C(4')8C/M 180C

Inlet: TEMP 40' 4' SDEG/MIN 170'

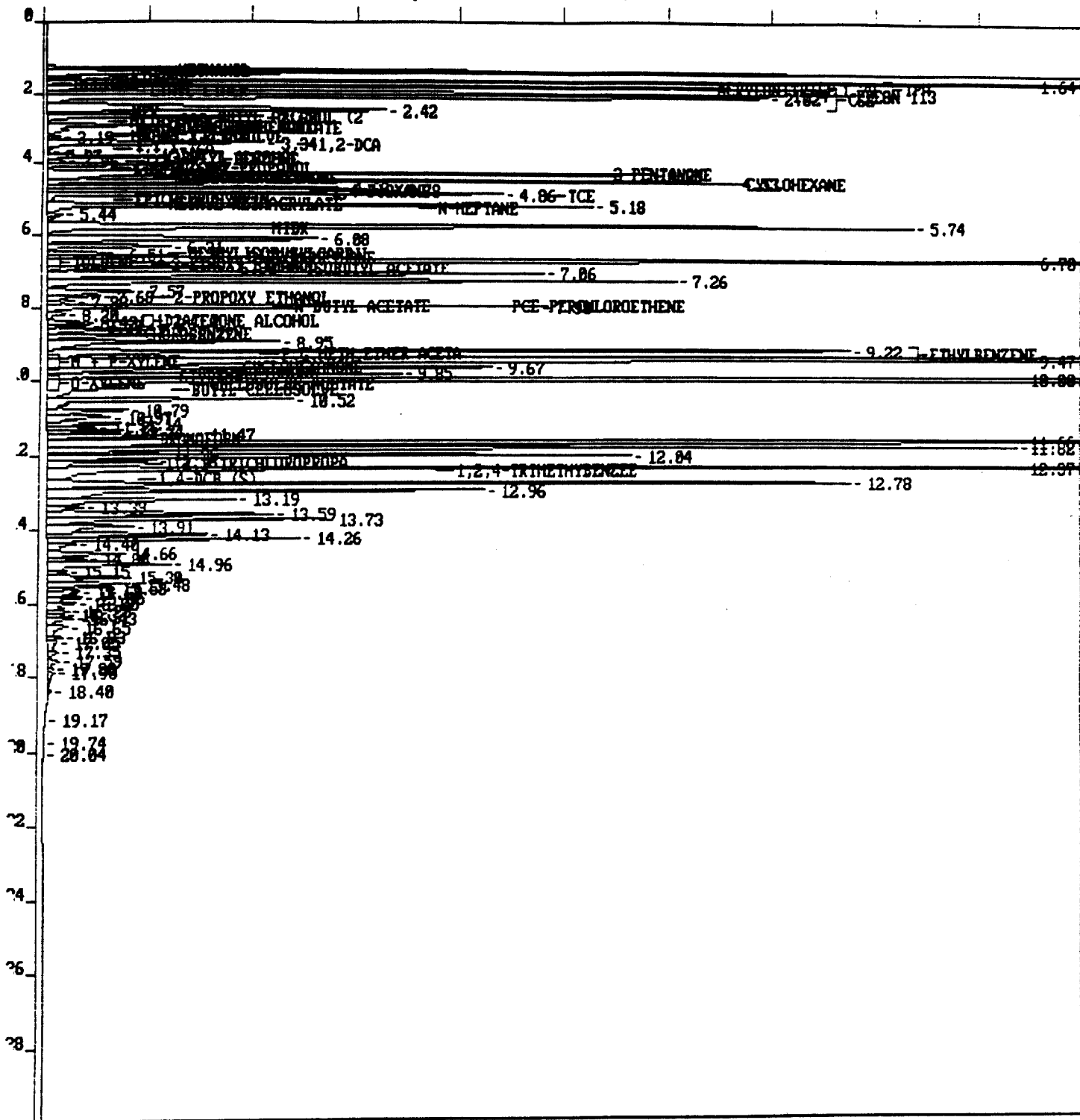
PK#	Ret	Ret Time	(min)	Peak Name	Amount MG	Grp Num	Peak Area	Peak Type	Peak Height	Ref Pk	Amount /Area	% Recovery
1	0.00Z	0.000	1.236		0.0000	0	4060	BV	2811		0.0000E+00	
	0.00Z	0.000	1.637		0.0000	0	189	VV	36		0.0000E+00	
3	3.68Z	0.000	1.787	IPA	0.0004	0	249	VV	55		0.1791E-05	
4	-0.82Z	0.000	2.021	CS2	0.0000	0	307158	SBB	27835		0.0000E+00	
	-1.16Z	0.000	2.856	N-HEXANE	0.0001	0	153	TVB	23		0.8720E-06	
	-1.29Z	0.000	3.841	BENZENE	0.0008	0	964	TBB	221		0.8028E-06	
7	0.00Z	0.000	12.007		0.0000	0	88	BB	23		0.0000E+00	
	0.00Z	0.000	12.759		0.0000	0	87647	BB	21737		0.0000E+00	
	0.00Z	0.000	18.470		0.0000	0	2693	BV	140		0.0000E+00	
10	0.00Z	0.000	19.622		0.0000	0	964	VB	44		0.0000E+00	

Group	Group Amount	Group Percent
0	0.0014	100.0000%
1	0.0000	0.0000%

Total Amount = 1.352707E-03, Total Area = 404163.9

C-13

File=M:\CP\GC-2\5141.11R Sample name=9309091-01A F Date printed= 09-14-1993 Time= 16:22:34
 0.00 to 29.99 min. Low Y = 5.81620 av High Y = 45.81620 av Span = 40.00000 av



C-14

09-14-1993_16:22:47

Sample Name: 9309091-01A F

Date: 09-14-1993 16:21:47

Dilution Factor: 2

Operator: WS

Sample Weight: 1

Instrument: HP-5890 #05129

Area Rejected: 10

EXTERNAL STD Calibrated

Data File: M:\CP\GC-2\G14I.11R Cycle# 11

Method File: M:\CP\GC-2\G1H.MET..ver# 184. 09/14/93 15:47:22

Calibr File: M:\CP\GC-2\G1H.CAL..ver# 652. 09/14/93 14:19:56

Analysis: IND HYG / DB-5 30M / 40C(4') 8C/M 180C

Misc: TEMP 40' 4' 8DEG/MIN 170'

Pk#	Ret	Relative Ret Time	Peak Name	Amount	Grp	Peak Area	Peak Type	Peak Height	Ref Pk	Amount /Area	% Recovery
1	0.00%	0.000	1.637	0.0000	0	390171	BV	112373		0.0000E+00	
2	3.68%	0.000	1.787 IPA	0.2552	0	71240	VV	30018		0.3583E-05	
3	0.00%	0.000	1.937	0.0000	0	89959	VV	28118		0.0000E+00	
4	-0.82%	0.000	2.021 CS2	0.0000	0	216163	VV	27805		0.0000E+00	
5	0.00%	0.000	2.421	0.0000	0	94983	VV	12977		0.0000E+00	
6	0.00%	0.000	2.622	0.0000	0	32145	VV	8278		0.0000E+00	
7	-1.16%	0.000	2.856 N-HEXANE	0.0363	0	20802	VV	4335		0.1744E-05	
8	0.00%	0.000	3.190	0.0000	0	1674	VV	473		0.0000E+00	
9	0.00%	0.000	3.340	0.0000	0	42911	VV	8288		0.0000E+00	
10	0.00%	0.000	3.674	0.0000	0	1678	VV	39		0.0000E+00	
11	-1.29%	0.000	3.841 BENZENE 0.0215	0.0275	0	14610	VV	4074		0.1606E-05	
12	0.00%	0.000	3.958	0.0000	0	2920	VV	648		0.0000E+00	
13	0.00%	0.000	4.075	0.0000	0	14241	VV	3694		0.0000E+00	
14	0.00%	0.000	4.292	0.0000	0	125631	VV	23226		0.0000E+00	
15	0.00%	0.000	4.526	0.0000	0	100894	VV	26181		0.0000E+00	
16	0.00%	0.000	4.693	0.0000	0	41805	VV	11071		0.0000E+00	
17	0.00%	0.000	4.776	0.0000	0	54443	VV	13066		0.0000E+00	
18	0.00%	0.000	4.860	0.0000	0	84901	VV	17552		0.0000E+00	
19	0.00%	0.000	5.177	0.0000	0	84855	VV	21017		0.0000E+00	
20	0.00%	0.000	5.444	0.0000	0	3337	VV	599		0.0000E+00	
21	0.00%	0.000	5.745	0.0000	0	154528	VV	33401		0.0000E+00	
22	0.00%	0.000	6.079	0.0000	0	76507	VV	10301		0.0000E+00	
23	0.00%	0.000	6.313	0.0000	0	21447	VV	4698		0.0000E+00	
24	0.00%	0.000	6.513	0.0000	0	9344	VV	2462		0.0000E+00	
25	0.00%	0.000	6.580	0.0000	0	18485	VV	4957		0.0000E+00	
26	-0.50%	0.000	6.697 TOLUENE	0.9106	0	548142	VV	164818		0.1661E-05	
27	0.00%	0.000	6.897	0.0000	0	30782	VV	6750		0.0000E+00	
28	0.00%	0.000	7.064	0.0000	0	102398	VV	19124		0.0000E+00	
29	0.00%	0.000	7.265	0.0000	0	107160	VV	24197		0.0000E+00	
30	0.00%	0.000	7.565	0.0000	0	17528	VV	3239		0.0000E+00	
31	0.00%	0.000	7.682	0.0000	0	11104	VV	1989		0.0000E+00	
32	0.00%	0.000	7.832	0.0000	0	4430	VV	1054		0.0000E+00	
33	0.00%	0.000	7.983	0.0000	0	67790	VV	18910		0.0000E+00	
34	0.00%	0.000	8.200	0.0000	0	5042	VV	671		0.0000E+00	
35	0.40%	0.000	8.417 DIACETONE ALCOHOL	0.0186	0	5463	VV	1387		0.3399E-05	
36	0.00%	0.000	8.500	0.0000	0	5913	VV	1587		0.0000E+00	
37	0.00%	0.000	8.617	0.0000	0	15804	VV	3692		0.0000E+00	
38	0.00%	0.000	8.767	0.0000	0	19896	VV	5110		0.0000E+00	
39	0.00%	0.000	8.951	0.0000	0	46761	VV	8888		0.0000E+00	
40	-0.36%	0.000	9.218 ETHYLBENZENE	0.1977	0	111027	VV	30882		0.1781E-05	
41	-0.18%	0.000	9.469 M + P-XYLENE	2.1630	1	1251948	VV	306970		0.1728E-05	
42	0.00%	0.000	9.669	0.0000	0	72644	VV	17112		0.0000E+00	
43	0.00%	0.000	9.853	0.0000	0	54685	VV	13531		0.0000E+00	
44	-0.33%	0.000	10.003 N-XYLENE	0.7729	1	474457	VV	124484		0.1707E-05	

C-15

00012

7	0.00%	0.000	10.972	0.0000	0	14666	VV	2376	0.0000E+00
8	0.00%	0.000	11.139	0.0000	0	12245	VV	2782	0.0000E+00
49	0.00%	0.000	11.256	0.0000	0	8756	VV	1863	0.0000E+00
50	0.00%	0.000	11.339	0.0000	0	12013	VV	2844	0.0000E+00
1	0.00%	0.000	11.473	0.0000	0	22133	VV	5617	0.0000E+00
2	0.00%	0.000	11.657	0.0000	0	292455	VV	62450	0.0000E+00
53	0.00%	0.000	11.824	0.0000	0	121240	VV	37371	0.0000E+00
4	0.00%	0.000	11.957	0.0000	0	17795	VV	4218	0.0000E+00
5	0.00%	0.000	12.041	0.0000	0	83835	VV	22453	0.0000E+00
56	0.00%	0.000	12.158	0.0000	0	19820	VV	4158	0.0000E+00
7	0.00%	0.000	12.375	0.0000	0	222603	VV	66320	0.0000E+00
8	0.00%	0.000	12.775	0.0000	0	110573	VV	30891	0.0000E+00
59	0.00%	0.000	12.959	0.0000	0	68769	VV	16781	0.0000E+00
60	0.00%	0.000	13.193	0.0000	0	33047	VV	7226	0.0000E+00
1	0.00%	0.000	13.393	0.0000	0	6786	VV	1390	0.0000E+00
2	0.00%	0.000	13.594	0.0000	0	45850	VV	8605	0.0000E+00
63	0.00%	0.000	13.727	0.0000	0	51366	VV	10447	0.0000E+00
4	0.00%	0.000	13.911	0.0000	0	22137	VV	3241	0.0000E+00
5	0.00%	0.000	14.128	0.0000	0	32706	VV	6121	0.0000E+00
66	0.00%	0.000	14.262	0.0000	0	36015	VV	9640	0.0000E+00
7	0.00%	0.000	14.395	0.0000	0	8752	VV	1119	0.0000E+00
8	0.00%	0.000	14.663	0.0000	0	12520	VV	2581	0.0000E+00
69	0.00%	0.000	14.796	0.0000	0	6878	VV	1485	0.0000E+00
70	0.00%	0.000	14.963	0.0000	0	31466	VV	4737	0.0000E+00
1	0.00%	0.000	15.147	0.0000	0	4773	VV	757	0.0000E+00
2	0.00%	0.000	15.297	0.0000	0	16584	VV	2820	0.0000E+00
73	0.00%	0.000	15.481	0.0000	0	14291	VV	3116	0.0000E+00
4	0.00%	0.000	15.581	0.0000	0	8336	VV	2199	0.0000E+00
5	0.00%	0.000	15.681	0.0000	0	9407	VV	1202	0.0000E+00
76	0.00%	0.000	15.848	0.0000	0	7331	VV	1313	0.0000E+00
77	0.00%	0.000	15.999	0.0000	0	8859	VV	1095	0.0000E+00
8	0.00%	0.000	16.232	0.0000	0	3883	VV	820	0.0000E+00
79	0.00%	0.000	16.333	0.0000	0	2668	VV	648	0.0000E+00
80	0.00%	0.000	16.433	0.0000	0	6569	VV	990	0.0000E+00
1	0.00%	0.000	16.650	0.0000	0	6784	VV	790	0.0000E+00
2	0.00%	0.000	16.934	0.0000	0	2960	VV	587	0.0000E+00
83	0.00%	0.000	17.051	0.0000	0	4999	VV	391	0.0000E+00
4	0.00%	0.000	17.351	0.0000	0	2587	VV	428	0.0000E+00
5	0.00%	0.000	17.585	0.0000	0	3315	VV	444	0.0000E+00
86	0.00%	0.000	17.802	0.0000	0	1193	VV	211	0.0000E+00
87	0.00%	0.000	17.902	0.0000	0	2975	VV	283	0.0000E+00
8	0.00%	0.000	18.403	0.0000	0	819	VB	155	0.0000E+00
89	0.00%	0.000	19.172	0.0000	0	91	BB	20	0.0000E+00
90	0.00%	0.000	19.739	0.0000	0	130	BB	23	0.0000E+00
1	0.00%	0.000	20.040	0.0000	0	136	BB	15	0.0000E+00

Group	Group Amount	Group Percent
0	1.4419	33.3175%
1	2.8859	66.6825%

Total Amount = 4.327764, Total Area = 6126612

C-16

09-14-1993_16:58:40

Sample Name: 9309091-02A B

Date: 09-14-1993 16:57:43

Dilution Factor: 1

Operator: WS

Sample Weight: 1

Instrument: HP-5890 #05129

Area Rejected: 10

EXTERNAL STD Calibrated

Data File: M:\CP\GC-2\G14I.12R Cycle# 12

Method File: M:\CP\GC-2\G1H.MET..ver# 184. 09/14/93 15:47:22

Calibr File: M:\CP\GC-2\G1H.CAL..ver# 652. 09/14/93 14:19:56

Analysis: IND HYG / DB-5 30M / 40C(4') 8C/M 180C

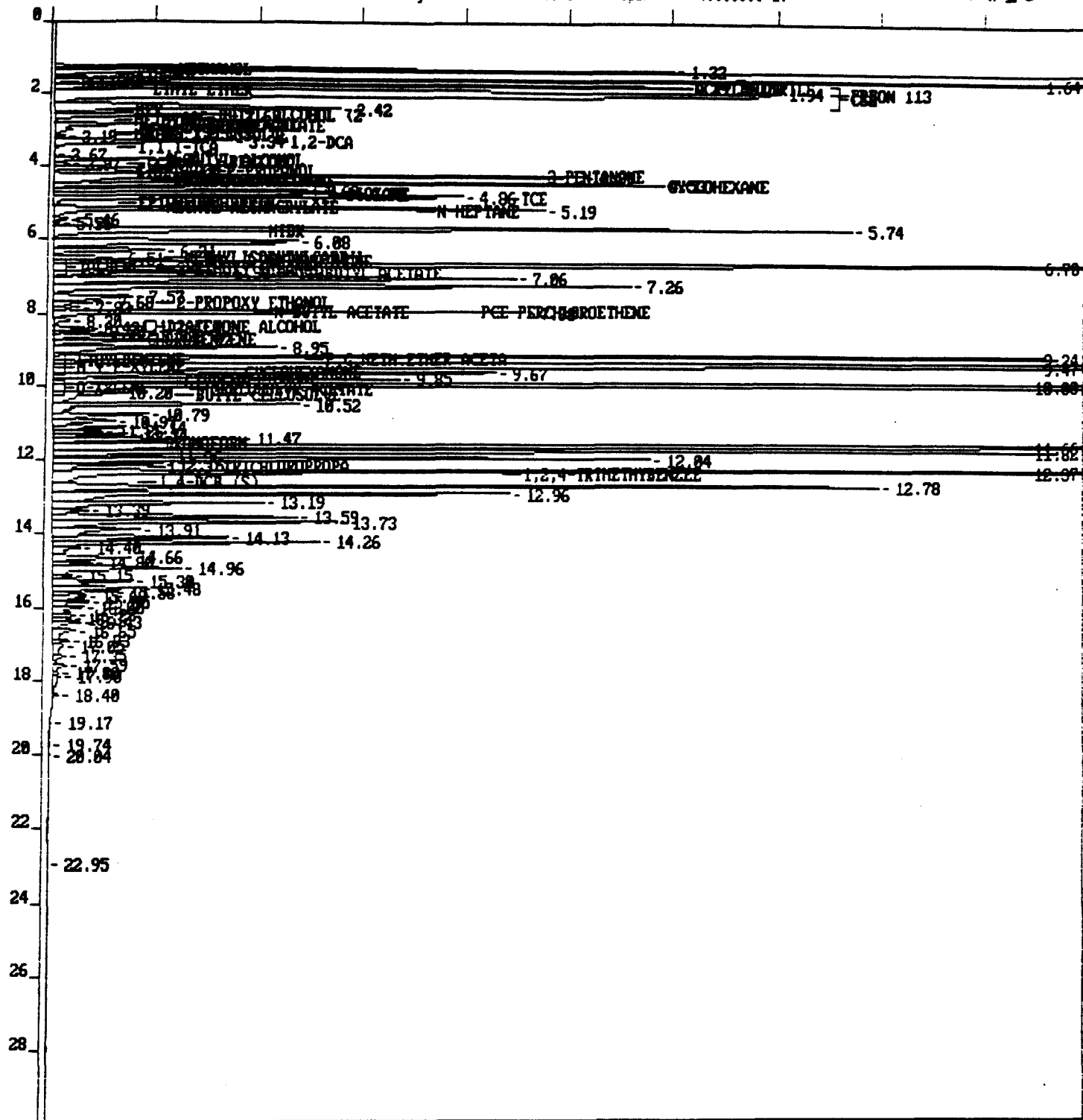
Misc: TEMP 40' 4' 8DEG/MIN 170'

Pk#	Ret	Ret Time	(min)	Peak Name	Amount MG	Grp Num	Peak Area	Peak Type	Peak Height	Ref Pt	Amount /Area	% Recovery
1	0.00%	0.000	1.236		0.0000	0	3441	BB	2537		0.0000E+00	
2	3.68%	0.000	1.787	IPA	0.0006	0	327	BV	52		0.1791E-05	
3	-0.82%	0.000	2.021	CS2	0.0000	0	301626	VV	27720		0.0000E+00	
4	-1.16%	0.000	2.856	N-HEXANE	0.0002	0	262	VB	36		0.8720E-06	
5	-1.29%	0.000	3.841	BENZENE	0.0007	0	844	BB	230		0.8028E-06	
6	0.00%	0.000	12.007		0.0000	0	133	BV	25		0.0000E+00	
7	0.00%	0.000	12.158		0.0000	0	186	VB	17		0.0000E+00	
8	0.00%	0.000	12.775		0.0000	0	85358	BB	21711		0.0000E+00	
9	0.00%	0.000	23.263		0.0000	0	471	BB	15		0.0000E+00	

Group	Group Amount	Group Percent
0	0.0015	100.0000%
1	0.0000	0.0000%

Total Amount = 1.49215E-03, Total Area = 392648.2

C-18



C-19

Clayton Environmental Consultants, Pleasanton, California

09-14-1993_17:34:16

Sample Name: 9309091-02A F

Date: 09-14-1993 17:33:50
Operator: WS

Dilution Factor: 2
Sample Weight: 1

Instrument: HP-5890 #05129
EXTERNAL STD Calibrated

Area Rejected: 10

Data File: M:\CP\GC-2\G141.13R Cycle# 13

Method File: M:\CP\GC-2\G1H.MET..ver# 184. 09/14/93 15:47:22

Calibr File: M:\CP\GC-2\G1H.CAL..ver# 652. 09/14/93 14:19:56

Analysis: IND HYG / DB-5 30M / 40C(4')8C/M 180C

Disc. TEMP 40' 4' 8DEG/MIN 170'

PK#	Ret	Relative Ret Time	Peak Name	Amount	Grp	Peak	Peak	Peak	Ref	Amount	% Recovery
		(min)		MG	Num	Area	Type	Height	Pk	/Area	
1	0.00Z	0.000	1.319	0.0000	0	38051	BV	24034		0.0000E+00	
2	0.00Z	0.000	1.637	0.0000	0	305312	VV	107064		0.0000E+00	
3	3.68Z	0.000	1.787 IPA	0.2201	0	61422	VV	24102		0.3583E-05	
4	-4.92Z	0.000	1.937 CS2	0.0000	0	304445	VV	27712		0.0000E+00	
5	0.00Z	0.000	2.421	0.0000	0	81824	VV	11069		0.0000E+00	
6	0.00Z	0.000	2.622	0.0000	0	26946	VV	6701		0.0000E+00	
7	-1.16Z	0.000	2.856 N-HEXANE	0.0302	0	17319	VV	3559		0.1744E-05	
8	0.00Z	0.000	3.190	0.0000	0	1441	VV	401		0.0000E+00	
9	0.00Z	0.000	3.340	0.0000	0	36861	VB	6876		0.0000E+00	
10	0.00Z	0.000	3.674	0.0000	0	12083	VV	28		0.0000E+00	
11	-1.29Z	0.000	3.841 BENZENE	0.0218	0	13579	VV	3690		0.1606E-05	
12	0.00Z	0.000	3.975	0.0000	0	2571	VV	556		0.0000E+00	
13	0.00Z	0.000	4.075	0.0000	0	12313	VV	3167		0.0000E+00	
14	0.00Z	0.000	4.292	0.0000	0	111863	VV	20524		0.0000E+00	
15	0.00Z	0.000	4.526	0.0000	0	90224	VV	23262		0.0000E+00	
16	0.00Z	0.000	4.693	0.0000	0	37132	VV	9770		0.0000E+00	
17	0.00Z	0.000	4.776	0.0000	0	48517	VV	11631		0.0000E+00	
18	0.00Z	0.000	4.860	0.0000	0	76980	VV	15820		0.0000E+00	
19	0.00Z	0.000	5.194	0.0000	0	77510	VV	19002		0.0000E+00	
20	0.00Z	0.000	5.461	0.0000	0	2199	VV	551		0.0000E+00	
21	0.00Z	0.000	5.561	0.0000	0	879	VV	235		0.0000E+00	
22	0.00Z	0.000	5.745	0.0000	0	140410	VV	30845		0.0000E+00	
23	0.00Z	0.000	6.079	0.0000	0	69810	VV	9454		0.0000E+00	
24	0.00Z	0.000	6.313	0.0000	0	19396	VV	4280		0.0000E+00	
25	0.00Z	0.000	6.513	0.0000	0	8311	VV	2265		0.0000E+00	
26	0.00Z	0.000	6.580	0.0000	0	17123	VV	4533		0.0000E+00	
27	-0.50Z	0.000	6.697 TOLUENE	0.9107	0	548178	VV	164835		0.1661E-05	
28	0.00Z	0.000	6.897	0.0000	0	28563	VV	6311		0.0000E+00	
29	0.00Z	0.000	7.064	0.0000	0	94725	VV	17854		0.0000E+00	
30	0.00Z	0.000	7.265	0.0000	0	99536	VV	22400		0.0000E+00	
31	0.00Z	0.000	7.565	0.0000	0	16256	VV	3071		0.0000E+00	
32	0.00Z	0.000	7.682	0.0000	0	10473	VV	1876		0.0000E+00	
33	0.00Z	0.000	7.832	0.0000	0	4165	VV	995		0.0000E+00	
34	0.00Z	0.000	7.983	0.0000	0	64720	VV	18175		0.0000E+00	
35	0.00Z	0.000	8.200	0.0000	0	4542	VV	635		0.0000E+00	
36	0.40Z	0.000	8.417 DIACETONE ALCOHOL	0.0177	0	5200	VV	1331		0.3399E-05	
37	0.00Z	0.000	8.500	0.0000	0	5719	VV	1549		0.0000E+00	
38	0.00Z	0.000	8.617	0.0000	0	15231	VV	3551		0.0000E+00	
39	0.00Z	0.000	8.767	0.0000	0	19260	VV	4860		0.0000E+00	
40	0.00Z	0.000	8.951	0.0000	0	45340	VV	8629		0.0000E+00	
41	-0.18Z	0.000	9.235 ETHYLBENZENE	0.2483	0	139436	VV	38426		0.1781E-05	
42	-0.18Z	0.000	9.469 M + P-XYLENE	2.2166	1	1282990	VV	314013		0.1728E-05	
43	0.00Z	0.000	9.669	0.0000	0	72285	VV	17083		0.0000E+00	
44	0.00Z	0.000	9.853	0.0000	0	54345	VV	13388		0.0000E+00	

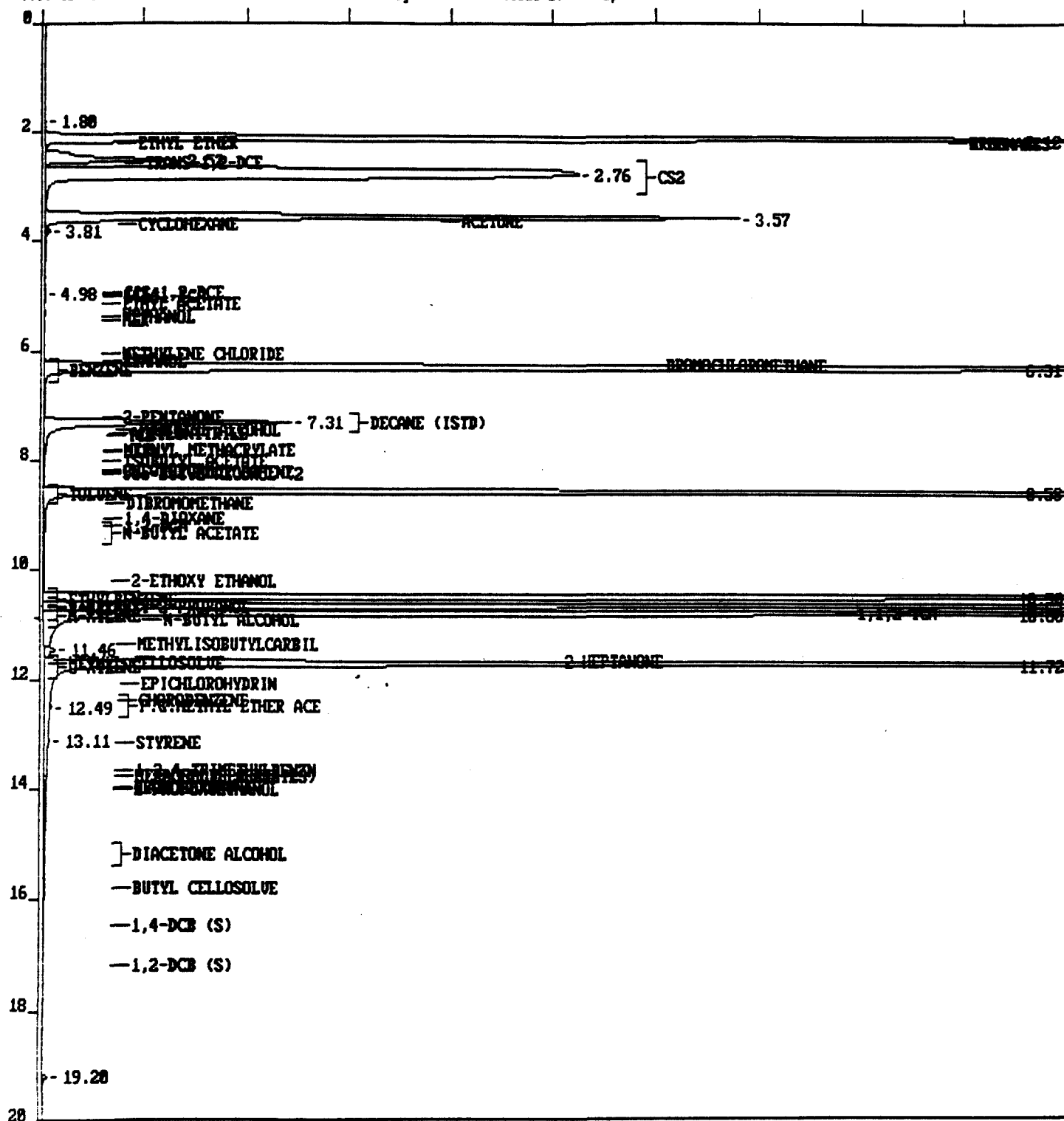
1-20

7	0.00Z	0.000	10.521	0.0000	0	37595	VV	9523	0.0000E+00
8	0.00Z	0.000	10.788	0.0000	0	16970	VV	3695	0.0000E+00
49	0.00Z	0.000	10.972	0.0000	0	14764	VV	2424	0.0000E+00
50	0.00Z	0.000	11.139	0.0000	0	13361	VV	2805	0.0000E+00
1	0.00Z	0.000	11.256	0.0000	0	7827	VV	1886	0.0000E+00
52	0.00Z	0.000	11.339	0.0000	0	12101	VV	2877	0.0000E+00
53	0.00Z	0.000	11.473	0.0000	0	26647	VV	7159	0.0000E+00
4	0.00Z	0.000	11.657	0.0000	0	313521	VV	68499	0.0000E+00
5	0.00Z	0.000	11.824	0.0000	0	123876	VV	38364	0.0000E+00
56	0.00Z	0.000	11.957	0.0000	0	17332	VV	4162	0.0000E+00
7	0.00Z	0.000	12.041	0.0000	0	85914	VV	23110	0.0000E+00
8	0.00Z	0.000	12.158	0.0000	0	19226	VV	4245	0.0000E+00
59	0.00Z	0.000	12.375	0.0000	0	245616	VV	75665	0.0000E+00
40	0.00Z	0.000	12.775	0.0000	0	111142	VV	31828	0.0000E+00
1	0.00Z	0.000	12.959	0.0000	0	69777	VV	17567	0.0000E+00
62	0.00Z	0.000	13.193	0.0000	0	34991	VV	8124	0.0000E+00
63	0.00Z	0.000	13.393	0.0000	0	6596	VV	1399	0.0000E+00
4	0.00Z	0.000	13.594	0.0000	0	48518	VV	9410	0.0000E+00
5	0.00Z	0.000	13.727	0.0000	0	53749	VV	10893	0.0000E+00
66	0.00Z	0.000	13.911	0.0000	0	22109	VV	3382	0.0000E+00
7	0.00Z	0.000	14.128	0.0000	0	35544	VV	6741	0.0000E+00
8	0.00Z	0.000	14.262	0.0000	0	37894	VV	10259	0.0000E+00
69	0.00Z	0.000	14.395	0.0000	0	8196	VV	1084	0.0000E+00
70	0.00Z	0.000	14.663	0.0000	0	12809	VV	2692	0.0000E+00
1	0.00Z	0.000	14.796	0.0000	0	6970	VV	1562	0.0000E+00
2	0.00Z	0.000	14.963	0.0000	0	32872	VV	4979	0.0000E+00
73	0.00Z	0.000	15.147	0.0000	0	4581	VV	747	0.0000E+00
4	0.00Z	0.000	15.297	0.0000	0	17542	VV	3125	0.0000E+00
5	0.00Z	0.000	15.481	0.0000	0	15184	VV	3352	0.0000E+00
76	0.00Z	0.000	15.581	0.0000	0	8780	VV	2355	0.0000E+00
77	0.00Z	0.000	15.681	0.0000	0	9689	VV	1285	0.0000E+00
9	0.00Z	0.000	15.848	0.0000	0	7486	VV	1386	0.0000E+00
79	0.00Z	0.000	15.999	0.0000	0	9358	VV	1181	0.0000E+00
80	0.00Z	0.000	16.232	0.0000	0	4055	VV	876	0.0000E+00
1	0.00Z	0.000	16.333	0.0000	0	2703	VV	667	0.0000E+00
2	0.00Z	0.000	16.433	0.0000	0	6825	VV	1079	0.0000E+00
83	0.00Z	0.000	16.650	0.0000	0	7100	VV	856	0.0000E+00
4	0.00Z	0.000	16.934	0.0000	0	3129	VV	630	0.0000E+00
5	0.00Z	0.000	17.051	0.0000	0	5151	VV	434	0.0000E+00
86	0.00Z	0.000	17.351	0.0000	0	3527	VV	495	0.0000E+00
87	0.00Z	0.000	17.585	0.0000	0	3350	VV	517	0.0000E+00
8	0.00Z	0.000	17.802	0.0000	0	1344	VV	236	0.0000E+00
89	0.00Z	0.000	17.902	0.0000	0	3740	VV	333	0.0000E+00
90	0.00Z	0.000	18.403	0.0000	0	1120	VB	205	0.0000E+00
1	0.00Z	0.000	19.172	0.0000	0	221	BB	23	0.0000E+00
2	0.00Z	0.000	19.739	0.0000	0	193	BB	30	0.0000E+00
93	0.00Z	0.000	20.040	0.0000	0	144	BB	21	0.0000E+00
4	0.00Z	0.000	22.946	0.0000	0	190	BB	10	0.0000E+00

Group	Group Amount	Group Percent
0	1.4488	33.2606%
1	2.9070	66.7394%

Total Amount = 4.355792, Total Area = 6073509

(C-21)



09-14-1993 13:01:17

Sample Name: 6930908-01S 20X

Date: 09-14-1993 13:00:58
Operator: WS

Dilution Factor: 1

Sample Weight: 1

Instrument: HP-5890 #05129
EXTERNAL STD Calibrated

Area Rejected: 10

Data File: M:\CP\GC-2\G141B.04R Cycle# 4

Method File: M:\CP\GC-2\GIHB.MET..ver# 214. 09/14/93 07:50:40

Calibr File: M:\CP\GC-2\GIHB.CAL..ver# 715. 09/14/93 07:53:08

Analysis: IND HYG / DB-WAX 30M / 40C(4') 8C/M 180C

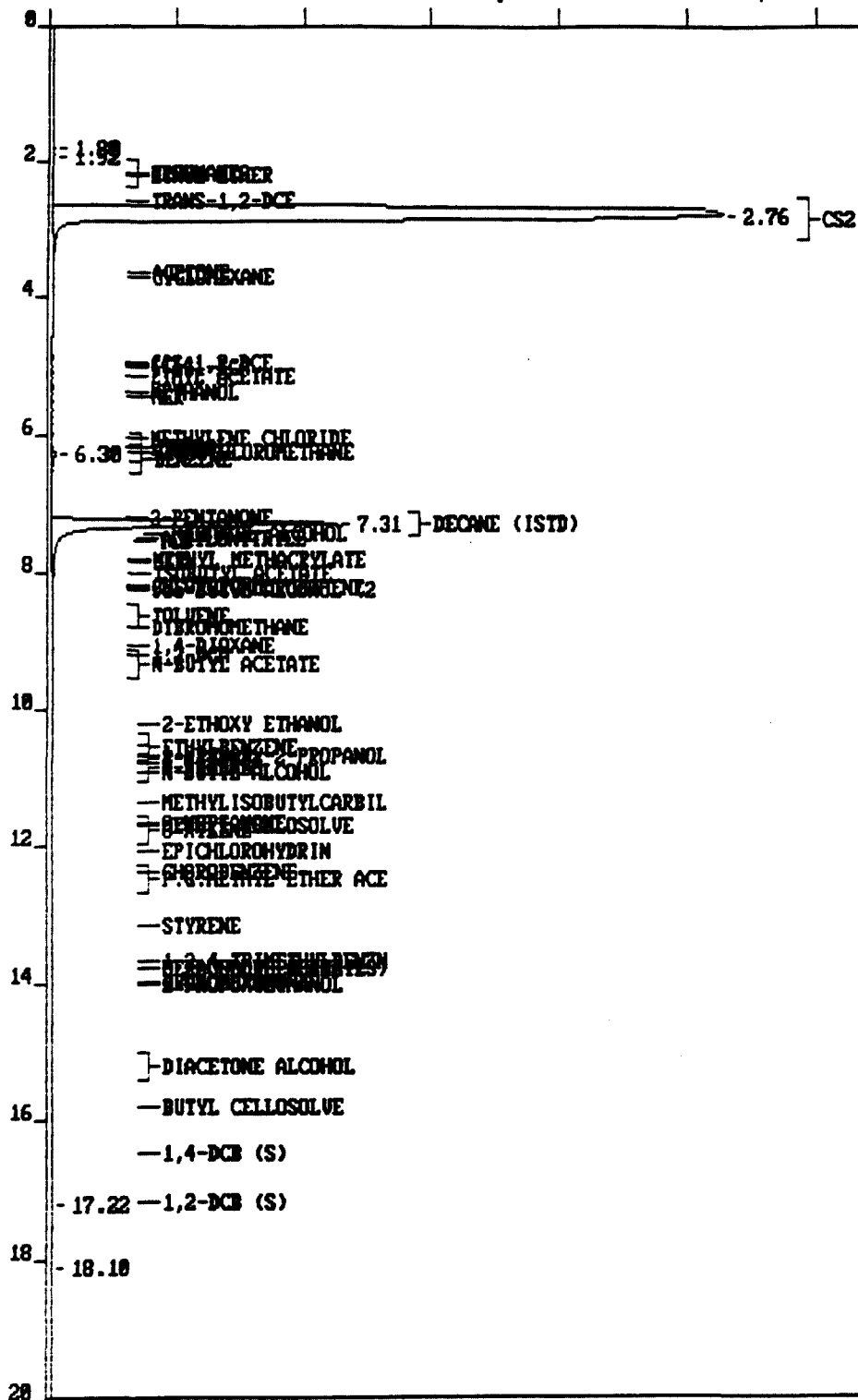
Misc1. TEMP 40' 4' 8DEG/MIN 170'

Peak	Ret	Relative Ret Time	Peak Name	Amount	Grp	Peak Area	Peak Type	Peak Height	Ref Pk	Amount /Area	% Recovery
1	0.00%	0.000	1.804	0.0000	0	55	BV	18		0.0000E+00	
2	0.00%	0.000	2.121	0.0000	0	229663	VV	42410		0.0000E+00	
3	0.00%	0.000	2.522	0.0000	0	29438	VV	4931		0.0000E+00	
4	-1.20%	0.000	2.756 CS2	0.0000	0	252141	VV	20940		0.0000E+00	
5	0.00%	0.000	3.574	0.0000	0	143813	SBB	27139		0.0000E+00	
6	0.00%	0.000	3.808	0.0000	0	697	TVB	145		0.0000E+00	
7	0.00%	0.000	4.977	0.0000	0	314	TBB	25		0.0000E+00	
8	-0.79%	0.000	6.313 BENZENE	0.4455	0	374477	BV	77031		0.1190E-05	
9	0.00%	1.000	7.315 DECANE (ISTD)	1.3557	0	55383	VV	9612	9	0.2448E-04	
10	-0.58%	0.000	8.584 TOLUENE	0.4421	0	365729	VV	89674		0.1209E-05	
11	-0.47%	0.000	10.504 ETHYL BENZENE	0.4544	0	351231	VV	93922		0.1294E-05	
12	-0.31%	0.000	10.671 P-XYLENE	0.4520	1	353022	VV	102025		0.1280E-05	
13	-0.46%	0.000	10.805 M-XYLENE	0.4305	1	368692	VV	100084		0.1168E-05	
14	0.00%	0.000	11.456	0.0000	0	3712	VV	454		0.0000E+00	
15	-0.28%	0.000	11.723 O-XYLENE	0.4508	1	368561	SBB	98892		0.1223E-05	
16	0.17%	0.000	12.492 P.6.METHYL ETHER ACE	0.0007	0	220	TVB	63		0.3185E-05	
17	0.00%	0.000	13.109	0.0000	0	158	TBB	43		0.0000E+00	
18	0.00%	0.000	19.205	0.0000	0	1223	BB	242		0.0000E+00	

Group	Group Amount	Group Percent
0	2.6983	66.9270%
1	1.3334	33.0730%

Total Amount = 4.031672, Total Area = 2898531

C-23



layton Environmental Consultants, Pleasanton, California

09-14-1993_14:24:29

Sample Name: 9309089/91-MB

Date: 09-14-1993 14:23:14
Operator: WS

Dilution Factor: 1
Sample Weight: 1

Instrument: HP-5890 #05129
EXTERNAL STD Calibrated

Area Rejected: 10

Data File: M:\CP\GC-2\G14IB.07R Cycle# 7

Method File: M:\CP\GC-2\GIHB.MET..ver# 214. 09/14/93 07:50:40

Calibr File: M:\CP\GC-2\GIHB.CAL..ver# 716. 09/14/93 14:19:06

Analysis: IND HYG / DB-WAX 30M / 40C(4')8C/M 180C

iscl. TEMP 40' 4' 8DEG/MIN 170'

#	Ret	Ret Time	(min)	Peak Name	Amount MG	Grp Num	Peak Area	Peak Type	Peak Height	Ref Pk	Amount /Area	% Recovery
1	0.00%	0.000	1.804		0.0000	0	44	BB	18		0.0000E+00	
2	0.00%	0.000	1.920		0.0000	0	66	BB	32		0.0000E+00	
3	-1.20%	0.000	2.756	CS2	0.0000	0	248491	BB	21061		0.0000E+00	
4	1.89%	0.000	6.296	IPA	0.0021	0	781	BB	127		0.2715E-05	
5	0.00%	1.000	7.315	DECANE (ISTD)	1.3003	0	53119	BB	8888	5	0.2448E-04	
6	0.00%	2.354	17.218		0.0000	0	125	BB	12		0.0000E+00	
7	0.00%	2.475	18.103		0.0000	0	202	BB	18		0.0000E+00	
8	0.00%	2.884	21.092		0.0000	0	12	BB	5		0.0000E+00	

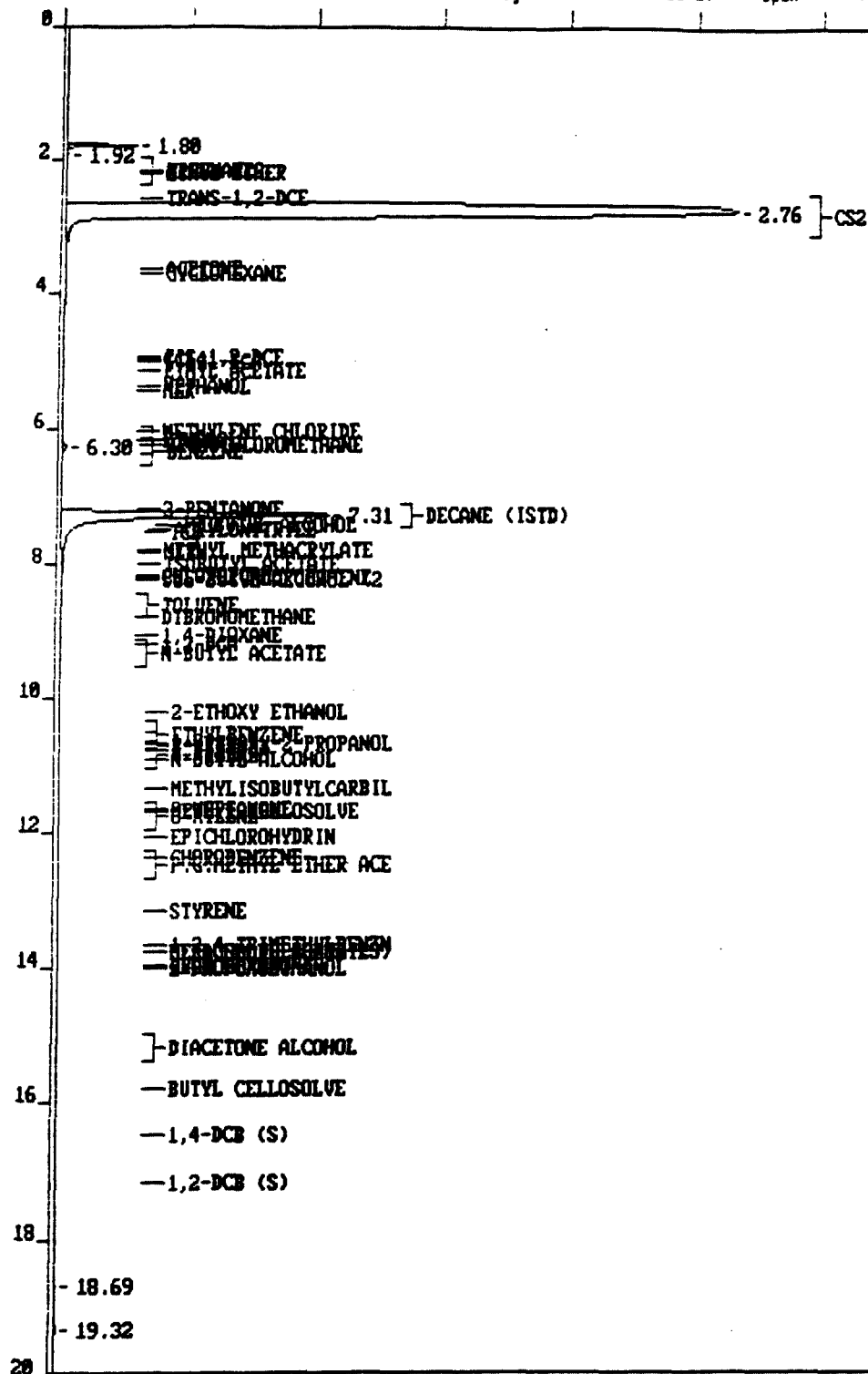
Group	Group Amount	Group Percent
0	1.3024	100.0000%
1	0.0000	0.0000%

Total Amount = 1.30238, Total Area = 302840.4

C-25

File=M:\CP\GC-2\61418.10R Sample name=9309091-01A B Date printed= 09-14-1993 Time= 15:46:23

0.00 to 20.01 min. Low Y = 5.89620 mv High Y = 45.89621 mv Span = 40.00000 mv



(C 26)

09-14-1993 15:46:37

Sample Name: 9309091-01A B

Date: 09-14-1993 15:45:22
Operator: WS

Dilution Factor: 1
Sample Weight: 1

Instrument: HP-5890 #05129
EXTERNAL STD Calibrated

Area Rejected: 10

Data File: M:\CP\GC-2\G14IB.10R Cycle# 10

Method File: M:\CP\GC-2\GIHB.MET..ver# 214. 09/14/93 07:50:40

Calibr File: M:\CP\GC-2\GIHB.CAL..ver# 716. 09/14/93 14:19:06

Analysis: IND HYG / DB-WAX 30M / 40C(4')8C/M 180C

Temp: TEMP 40' 4' 8DEG/MIN 170'

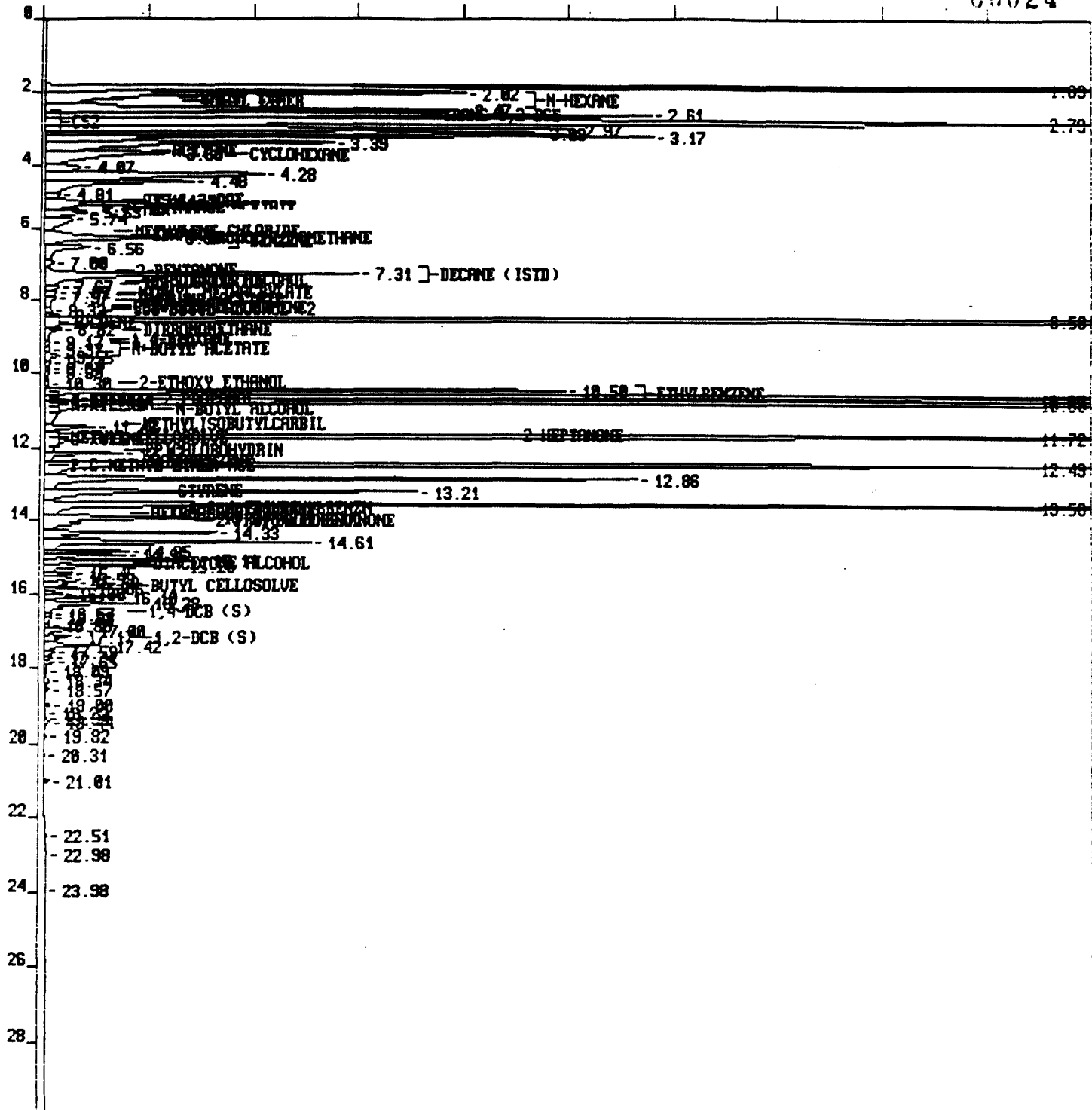
Ret	Ret Time	(min)	Peak Name	Amount	Grp	Peak	Peak	Peak	Ref	Amount	
1	Ret	Ret Time	(min)	Peak Name	MG	Num	Area	Type	Height	Pk	% Recovery
1	0.00%	0.000	1.804		0.0000	0	2966	BV	2150		0.0000E+00
2	0.00%	0.000	1.920		0.0000	0	80	VB	30		0.0000E+00
3	-1.20%	0.000	2.756	CS2	0.0000	0	249845	BB	21243		0.0000E+00
4	1.89%	0.000	6.296	IPA	0.0020	0	755	BB	123		0.2715E-05
5	0.00%	1.000	7.315	DECANE (ISTD)	1.2806	0	52315	BB	8373	5	0.2448E-04
6	0.00%	2.555	18.687		0.0000	0	356	BB	38		0.0000E+00
7	0.00%	2.642	19.322		0.0000	0	324	BB	34		0.0000E+00

Group	Group Amount	Group Percent
0	1.2826	100.0000%
1	0.0000	0.0000%

Total Amount = 1.282638, Total Area = 306641.1

C-27

00024



C-28

09-15-1993 10:28:38 10025

Sample Name: 9309091-01A F

Date: 09-14-1993 16:21:47

Dilution Factor: 2

Operator: WS

Sample Weight: 1

Instrument: HP-5890 #05129

Area Rejected: 10

EXTERNAL STD Calibrated

Data File: M:\CP\GC-2\G14IB.11R Cycle# 11

Method File: M:\CP\GC-2\GIHB.MET..ver# 215. 09/14/93 15:47:56

Calibr File: M:\CP\GC-2\GIHB.CAL..ver# 718. 09/15/93 10:27:42

Analysis: IND HYG / DB-WAX 30M / 40C(4')8C/M 180C

Inscr. TEMP 40' 4' 8DEG/MIN 170'

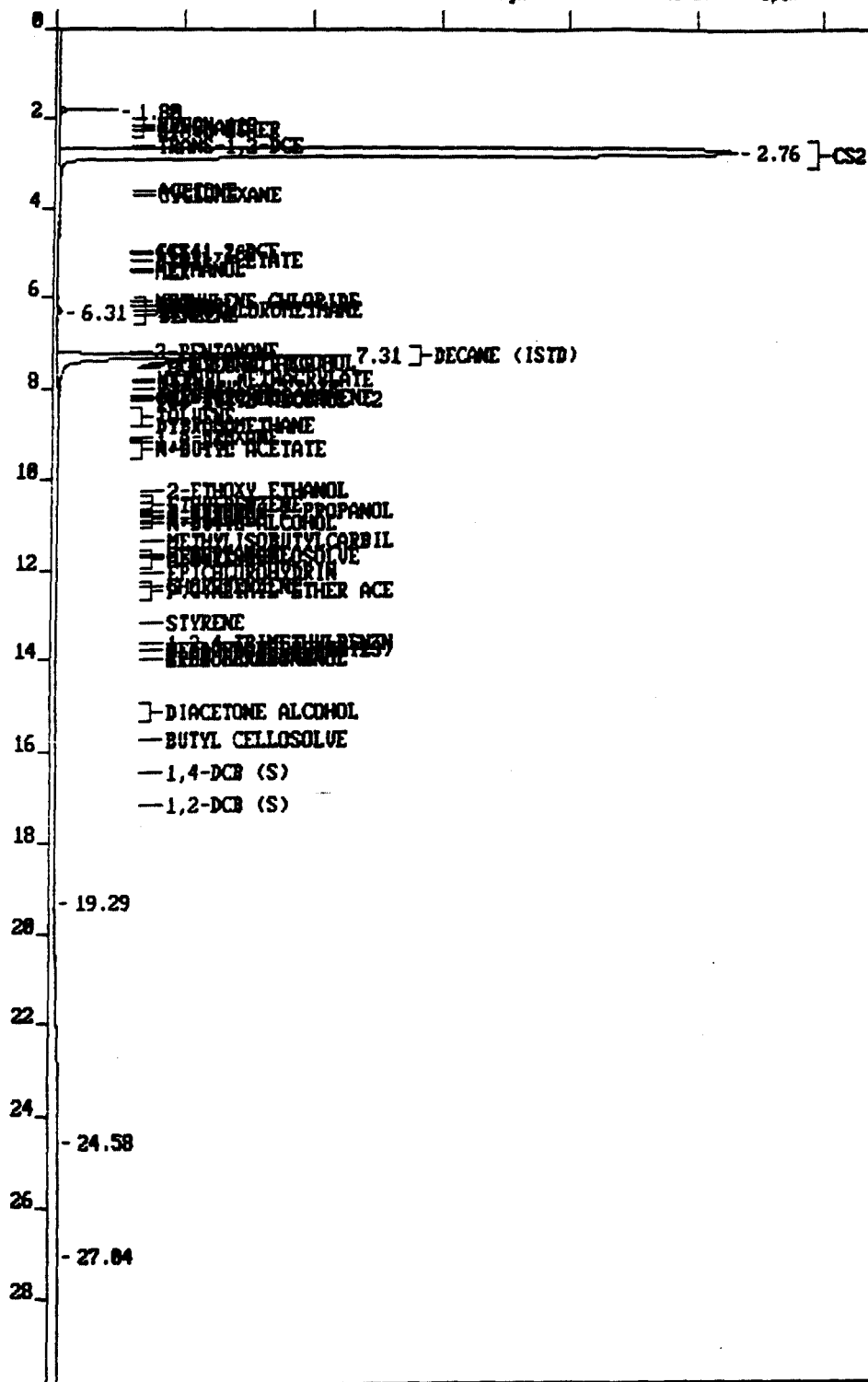
PK#	Ret	Rel Time	Ret Time (min)	Peak Name	Amount MS	Grp Num	Peak Area	Peak Type	Peak Height	Ref Pk	Amount /Area	% Recovery
1	0.00%	0.000	1.887		0.0000	0	294957	BV	86311		0.0000E+00	
2	-6.20%	0.000	2.021	N-HEXANE	0.2621	0	106557	VV	16013		0.2460E-05	
3	0.00%	0.000	2.472		0.0000	0	97501	VV	15677		0.0000E+00	
4	0.00%	0.000	2.605		0.0000	0	152392	VV	23056		0.0000E+00	
5	0.00%	0.000	2.789	CS2	0.0000	0	292501	VV	43441		0.0000E+00	
6	0.00%	0.000	2.973		0.0000	0	109514	VV	19932		0.0000E+00	
7	0.00%	0.000	3.089		0.0000	0	81577	VV	18597		0.0000E+00	
8	0.00%	0.000	3.173		0.0000	0	122402	VV	23126		0.0000E+00	
9	0.00%	0.000	3.390		0.0000	0	74414	VV	10985		0.0000E+00	
10	0.00%	0.000	3.691		0.0000	0	49949	VV	4697		0.0000E+00	
11	0.00%	0.000	4.075		0.0000	0	11569	VV	1318		0.0000E+00	
12	0.00%	0.000	4.275		0.0000	0	73243	VV	8252		0.0000E+00	
13	0.00%	0.000	4.476		0.0000	0	49440	VV	5595		0.0000E+00	
14	0.00%	0.000	4.810		0.0000	0	4154	VV	568		0.0000E+00	
15	0.00%	0.000	5.093		0.0000	0	31745	VV	4041		0.0000E+00	
16	0.00%	0.000	5.311		0.0000	0	14381	VV	1514		0.0000E+00	
17	0.00%	0.000	5.528		0.0000	0	13408	VV	1589		0.0000E+00	
18	0.00%	0.000	5.745		0.0000	0	15381	VV	1090		0.0000E+00	
19	-1.05%	0.000	6.296	BENZENE	0.0879	0	36927	VV	4684		0.2379E-05	
20	0.00%	0.000	6.563		0.0000	0	16882	VV	1716		0.0000E+00	
21	0.00%	0.000	6.997		0.0000	0	3411	VV	351		0.0000E+00	
22	0.00%	1.000	7.315	DECANE (ISTD)	3.7412	0	76420	VV	11923	22	0.4896E-04	
23	0.00%	1.048	7.665		0.0000	0	4017	VV	517		0.0000E+00	
24	0.00%	1.068	7.816		0.0000	0	3196	VV	457		0.0000E+00	
25	0.00%	1.089	7.966		0.0000	0	5366	VV	405		0.0000E+00	
26	0.00%	1.139	8.333		0.0000	0	2716	VV	277		0.0000E+00	
27	0.00%	1.155	8.450		0.0000	0	2562	VV	544		0.0000E+00	
28	-0.58%	0.000	8.584	TOLUENE	0.8937	0	369706	VV	92591		0.2417E-05	
29	0.00%	0.000	8.818		0.0000	0	6365	VV	635		0.0000E+00	
30	0.00%	0.000	9.168		0.0000	0	1452	VV	176		0.0000E+00	
31	0.36%	0.000	9.369	N-BUTYL ACETATE	0.0083	0	1693	VV	180		0.4896E-05	
32	0.00%	0.000	9.552		0.0000	0	4231	VV	564		0.0000E+00	
33	0.00%	0.000	9.736		0.0000	0	1622	VV	211		0.0000E+00	
34	0.00%	0.000	9.870		0.0000	0	949	VV	174		0.0000E+00	
35	0.00%	0.000	9.987		0.0000	0	1628	VV	168		0.0000E+00	
36	0.00%	0.000	10.304		0.0000	0	1444	VV	125		0.0000E+00	
37	-0.47%	0.000	10.504	ETHYLBENZENE	0.1873	0	72386	VV	19806		0.2587E-05	
38	-0.31%	0.000	10.671	P-XYLENE	0.6929	1	270581	VV	75973		0.2561E-05	
39	-0.46%	0.000	10.805	M-XYLENE	1.4156	1	606150	VV	162970		0.2335E-05	
40	0.00%	0.000	11.456		0.0000	0	9134	VV	1893		0.0000E+00	
41	-0.28%	0.000	11.723	O-XYLENE	0.6997	1	285998	VV	76066		0.2446E-05	
42	0.00%	0.000	12.174		0.0000	0	13397	VV	2907		0.0000E+00	
43	0.00%	0.000	12.492		0.0000	0	211518	VV	43789		0.0000E+00	
44	0.00%	0.000	12.859		0.0000	0	87624	VV	22489		0.0000E+00	
45	0.00%	0.000	13.210		0.0000	0	61217	VV	14115		0.0000E+00	
46	0.00%	0.000	13.577		0.0000	0	156750	VV	44219		0.0000E+00	
47	0.00%	0.000	13.944		0.0000	0	45518	VV	6088		0.0000E+00	

C-29

50	0.00%	0.000	14.846	0.0000	0	11939	VV	3145	0.0000E+00
	0.00%	0.000	14.963	0.0000	0	12102	VV	3039	0.0000E+00
	0.00%	0.000	15.113	0.0000	0	20131	VV	5709	0.0000E+00
53	0.00%	0.000	15.264	0.0000	0	19522	VV	4820	0.0000E+00
	0.00%	0.000	15.447	0.0000	0	5443	VV	1061	0.0000E+00
	0.00%	0.000	15.581	0.0000	0	5463	VV	1022	0.0000E+00
56	0.00%	0.000	15.681	0.0000	0	7877	VV	1187	0.0000E+00
57	0.00%	0.000	15.865	0.0000	0	6138	VV	1377	0.0000E+00
	0.00%	0.000	15.999	0.0000	0	2838	VV	656	0.0000E+00
59	0.00%	0.000	16.099	0.0000	0	10101	VV	2669	0.0000E+00
60	0.00%	0.000	16.282	0.0000	0	18843	VV	3501	0.0000E+00
	0.00%	0.000	16.566	0.0000	0	1773	VV	282	0.0000E+00
	0.00%	0.000	16.683	0.0000	0	2618	VV	299	0.0000E+00
63	0.00%	0.000	16.884	0.0000	0	1077	VV	199	0.0000E+00
	0.00%	0.000	17.001	0.0000	0	6264	VV	1456	0.0000E+00
	0.00%	0.000	17.168	0.0000	0	5950	VV	1023	0.0000E+00
66	0.00%	0.000	17.418	0.0000	0	11111	VV	2075	0.0000E+00
67	0.00%	0.000	17.585	0.0000	0	2571	VV	411	0.0000E+00
	0.00%	0.000	17.735	0.0000	0	1562	VV	335	0.0000E+00
67	0.00%	0.000	17.852	0.0000	0	2399	VV	408	0.0000E+00
70	0.00%	0.000	18.086	0.0000	0	950	VV	116	0.0000E+00
	0.00%	0.000	18.337	0.0000	0	2130	VV	205	0.0000E+00
	0.00%	0.000	18.570	0.0000	0	1547	VV	171	0.0000E+00
73	0.00%	0.000	19.005	0.0000	0	1112	VV	228	0.0000E+00
	0.00%	0.000	19.222	0.0000	0	311	VV	55	0.0000E+00
	0.00%	0.000	19.339	0.0000	0	378	VV	106	0.0000E+00
76	0.00%	0.000	19.439	0.0000	0	1300	VV	206	0.0000E+00
77	0.00%	0.000	19.823	0.0000	0	386	VV	72	0.0000E+00
	0.00%	0.000	20.307	0.0000	0	211	VB	55	0.0000E+00
	0.00%	0.000	21.009	0.0000	0	786	BB	222	0.0000E+00
80	0.00%	0.000	22.512	0.0000	0	287	BV	62	0.0000E+00
	0.00%	0.000	22.979	0.0000	0	244	VB	52	0.0000E+00
	0.00%	0.000	23.981	0.0000	0	80	BB	13	0.0000E+00

Group	Group Amount	Group Percent
0	5.1805	64.8473%
1	2.8083	35.1527%

Total Amount = 7.988739, Total Area = 4196572



C-31

09-14-1993_16:59:03

Sample Name: 9309091-02A B

Date: 09-14-1993 16:57:43

Dilution Factor: 1

Operator: WS

Sample Weight: 1

Instrument: HP-5890 #05129

Area Rejected: 10

EXTERNAL STD Calibrated

Data File: M:\CP\GC-2\G141B.12R Cycle# 12

Method File: M:\CP\GC-2\GIHB.MET..ver# 215. 09/14/93 15:47:56

Calibr File: M:\CP\GC-2\GIHB.CAL..ver# 716. 09/14/93 14:19:06

Analysis: IND HYG / DB-WAX 30M / 40C(4')8C/M 180C

Inlet: TEMP 40' 4' 8DEG/MIN 170'

PK#	Ret	Ret Time	(min)	Peak Name	Amount	Grp	Peak	Peak	Peak	Ref	Amount	
					MG	Num	Area	Type	Height	Pk	/Area	% Recovery
1	0.00%	0.000	1.804		0.0000	0	2521	BB	1779		0.0000E+00	
2	-1.20%	0.000	2.756	CS2	0.0000	0	247011	BB	21121		0.0000E+00	
3	2.16%	0.000	6.313	IPA	0.0020	0	720	BB	121		0.2715E-05	
4	0.00%	1.000	7.315	DECANE (ISTD)	1.3021	0	53195	BB	8635	4	0.2448E-04	
5	0.00%	2.637	19.288		0.0000	0	106	BB	13		0.0000E+00	
6	0.00%	3.361	24.582		0.0000	0	475	BV	10		0.0000E+00	
7	0.00%	3.696	27.037		0.0000	0	364	VB	21		0.0000E+00	

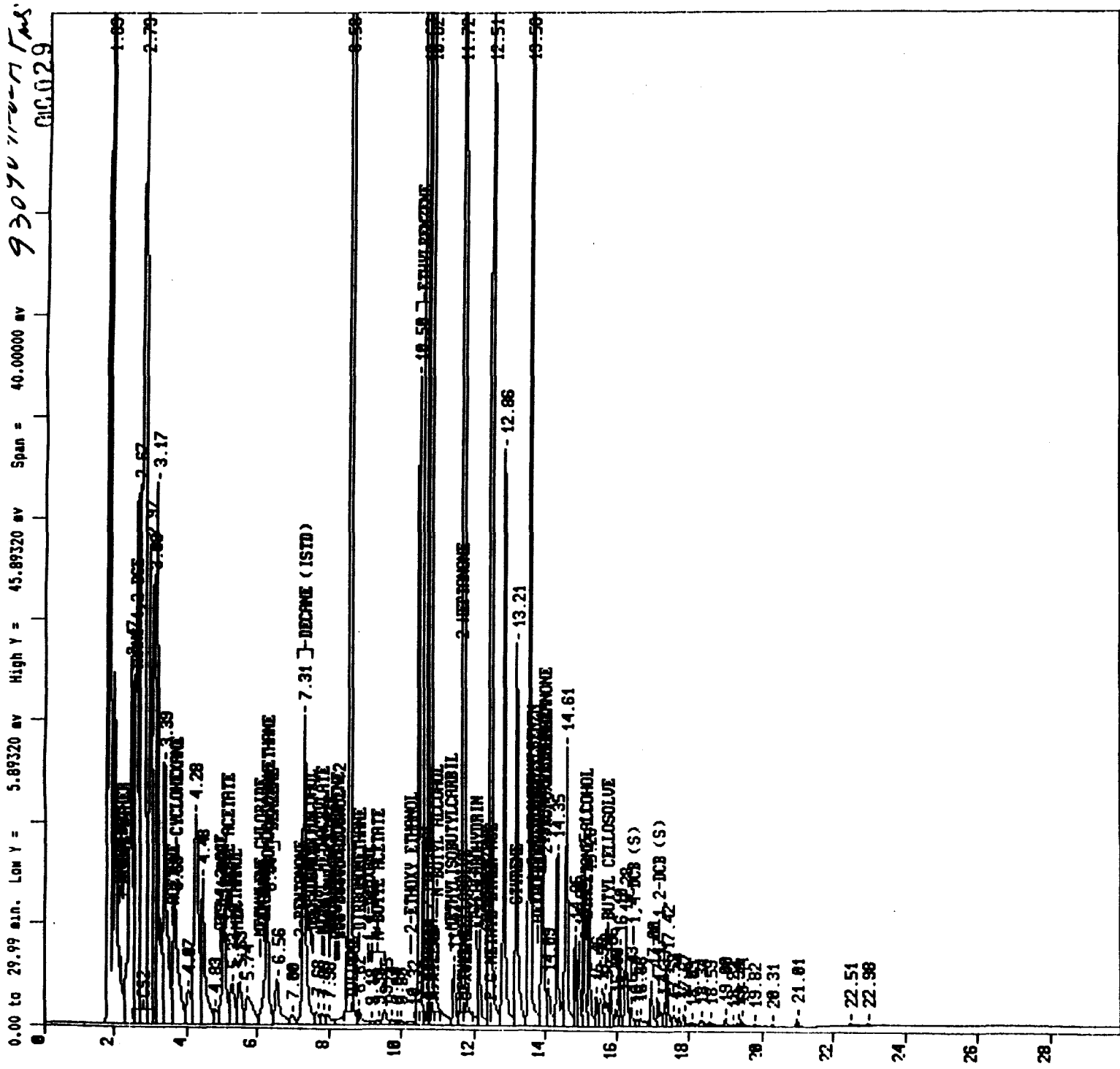
Group	Group Amount	Group Percent
-------	--------------	---------------

0	1.3041	100.0000%
---	--------	-----------

1	0.0000	0.0000%
---	--------	---------

Total Amount = 1.30408, Total Area = 304392.6

C-32



0-33

09-15-1993_10:29:37

Sample Name: 9309091-02A F

Date: 09-14-1993 17:33:50

Dilution Factor: 2

Operator: WS

Sample Weight: 1

Instrument: HP-5890 #05129

EXTERNAL STD Calibrated

Area Rejected: 10

Data File: M:\CP\GC-2\G141B.13R Cycle# 13

Method File: M:\CP\GC-2\GIHB.MET..ver# 215. 09/14/93 15:47:56

Calibr File: M:\CP\GC-2\GIHB.CAL..ver# 718. 09/15/93 10:27:42

Analysis: IND HYG / DB-WAX 30M / 40C(4')BC/M 180C

Inscr. TEMP 40' 4' 3DEG/MIN 170'

PK#	Ret	Relative Ret Time	(min)	Peak Name	Amount	Grp	Peak	Peak	Peak	Ref	Amount	
					MG	Num	Area	Type	Height	Pk	/Area	% Recovery
1	0.00Z	0.000	1.887		0.0000	0	347895	BV	73090		0.0000E+00	
2	0.00Z	0.000	2.472		0.0000	0	86332	VV	13861		0.0000E+00	
3	0.00Z	0.000	2.672		0.0000	0	140357	VV	20886		0.0000E+00	
4	0.00Z	0.000	2.789	CS2	0.0000	0	283955	VV	42049		0.0000E+00	
5	0.00Z	0.000	2.973		0.0000	0	101008	VV	18623		0.0000E+00	
6	0.00Z	0.000	3.089		0.0000	0	75069	VV	17329		0.0000E+00	
7	0.00Z	0.000	3.173		0.0000	0	116271	VV	21313		0.0000E+00	
8	0.00Z	0.000	3.390		0.0000	0	68595	VV	10239		0.0000E+00	
9	0.00Z	0.000	3.691		0.0000	0	47956	VV	4562		0.0000E+00	
10	0.00Z	0.000	4.075		0.0000	0	11013	VV	1286		0.0000E+00	
11	0.00Z	0.000	4.275		0.0000	0	72100	VV	8247		0.0000E+00	
12	0.00Z	0.000	4.476		0.0000	0	49391	VV	5658		0.0000E+00	
13	0.00Z	0.000	4.826		0.0000	0	4427	VV	547		0.0000E+00	
14	0.00Z	0.000	5.093		0.0000	0	31450	VV	4137		0.0000E+00	
15	0.00Z	0.000	5.327		0.0000	0	14469	VV	1512		0.0000E+00	
16	0.00Z	0.000	5.528		0.0000	0	13456	VV	1608		0.0000E+00	
17	0.00Z	0.000	5.745		0.0000	0	15619	VV	1087		0.0000E+00	
18	-0.79Z	0.000	6.313	BENZENE	0.0881	0	37011	VV	4559		0.2379E-05	
19	0.00Z	0.000	6.563		0.0000	0	16643	VV	1733		0.0000E+00	
20	0.00Z	0.000	6.997		0.0000	0	3369	VV	352		0.0000E+00	
21	0.00Z	1.000	7.315	DECANE (ISTD)	3.8009	0	77638	VV	12109	21	0.4896E-04	
22	0.00Z	1.050	7.682		0.0000	0	3759	VV	500		0.0000E+00	
23	0.00Z	1.071	7.832		0.0000	0	3078	VV	442		0.0000E+00	
24	0.00Z	1.091	7.983		0.0000	0	4624	VV	397		0.0000E+00	
25	-0.58Z	0.000	8.584	TOLUENE	0.9170	0	379355	VV	93218		0.2417E-05	
26	0.00Z	0.000	8.818		0.0000	0	6180	VV	633		0.0000E+00	
27	0.00Z	0.000	9.185		0.0000	0	1301	VV	156		0.0000E+00	
28	0.54Z	0.000	9.385	N-BUTYL ACETATE	0.0076	0	1559	VV	167		0.4896E-05	
29	0.00Z	0.000	9.552		0.0000	0	4262	VV	589		0.0000E+00	
30	0.00Z	0.000	9.736		0.0000	0	1568	VV	207		0.0000E+00	
31	0.00Z	0.000	9.870		0.0000	0	907	VV	166		0.0000E+00	
32	0.00Z	0.000	9.987		0.0000	0	1471	VV	168		0.0000E+00	
33	0.00Z	0.000	10.321		0.0000	0	1940	VV	124		0.0000E+00	
34	-0.47Z	0.000	10.504	ETHYLBENZENE	0.2402	0	92854	VV	25480		0.2587E-05	
35	-0.31Z	0.000	10.671	P-XYLENE	0.7069	1	276021	VV	78258		0.2561E-05	
36	-0.31Z	0.000	10.822	M-XYLENE	1.4400	1	625147	VV	167248		0.2335E-05	
37	0.00Z	0.000	11.473		0.0000	0	10809	VV	2308		0.0000E+00	
38	-0.28Z	0.000	11.723	O-XYLENE	0.7081	1	289433	VV	80509		0.2446E-05	
39	0.00Z	0.000	12.174		0.0000	0	16429	VV	3704		0.0000E+00	
40	0.00Z	0.000	12.508		0.0000	0	225570	VV	46566		0.0000E+00	
41	0.00Z	0.000	12.859		0.0000	0	89234	VV	22603		0.0000E+00	
42	0.00Z	0.000	13.210		0.0000	0	62256	VV	14967		0.0000E+00	
43	0.00Z	0.000	13.577		0.0000	0	172148	VV	47633		0.0000E+00	
44	0.00Z	0.000	13.944		0.0000	0	37772	VV	6454		0.0000E+00	
45	0.00Z	0.000	14.095		0.0000	0	9873	VV	1414		0.0000E+00	
46	0.00Z	0.000	14.345		0.0000	0	29847	VV	6702		0.0000E+00	
47	0.00Z	0.000	14.613		0.0000	0	46861	VV	10841		0.0000E+00	

C-34

0-35

Total Amount = 7.928832, Total Area = 4183570

Group		Group Amount		Group Percent	
0	5.0539	63.7405%	1	2.8750	36.2595%
50	0.0000	0.0000	0.0000	21182	6198
49	0.0000	0.0000	0.0000	21003	5401
48	0.0000	0.0000	0.0000	5526	1114
47	0.0000	0.0000	0.0000	5581	1054
46	0.0000	0.0000	0.0000	8255	1253
45	0.0000	0.0000	0.0000	6365	1469
44	0.0000	0.0000	0.0000	3299	674
43	0.0000	0.0000	0.0000	10210	2967
42	0.0000	0.0000	0.0000	15955	3796
41	0.0000	0.0000	0.0000	3613	730
40	0.0000	0.0000	0.0000	1687	272
39	0.0000	0.0000	0.0000	2726	302
38	0.0000	0.0000	0.0000	6886	1693
37	0.0000	0.0000	0.0000	6278	1116
36	0.0000	0.0000	0.0000	2551	558
35	0.0000	0.0000	0.0000	9275	2304
34	0.0000	0.0000	0.0000	2637	431
33	0.0000	0.0000	0.0000	1583	347
32	0.0000	0.0000	0.0000	2486	428
31	0.0000	0.0000	0.0000	1023	128
30	0.0000	0.0000	0.0000	2351	228
29	0.0000	0.0000	0.0000	1815	187
28	0.0000	0.0000	0.0000	1304	283
27	0.0000	0.0000	0.0000	390	66
26	0.0000	0.0000	0.0000	507	127
25	0.0000	0.0000	0.0000	1608	251
24	0.0000	0.0000	0.0000	675	92
23	0.0000	0.0000	0.0000	394	76
22	0.0000	0.0000	0.0000	1125	309
21	0.0000	0.0000	0.0000	624	92
20	0.0000	0.0000	0.0000	861	80

00031

FORMAL SITE CLOSURE REQUEST

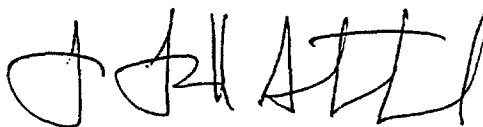
September 16, 1996

UNOCAL STATION 4357
11280 National Boulevard
Los Angeles, California

Prepared For:

Unocal Environmental Remediation Services
376 South Valencia Avenue
Brea, California 92823

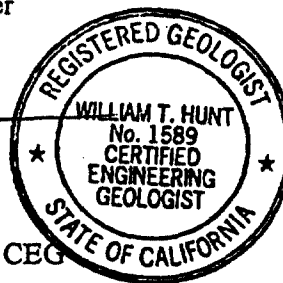
By:



J. Todd Stanford, REA, REHS
Risk Assessment Manager



William T. Hunt, RG, CHG, CEG
President, CEO



ALTON GEOSCIENCE
25A Technology Drive
Irvine, California 92618

Formal Site Closure Request

Unocal Station 4357, 11280 National Boulevard, Los Angeles, California

September 16, 1996

INTRODUCTION

This report represents a formal site closure request and technical justification for Unocal Station 4357 located at 11280 National Boulevard in Los Angeles, California. The objectives of this report are to:

- Summarize the findings and conclusions of environmental investigations and testing conducted at the site and;
- Provide sufficient risk management information to support site closure with no further action.

The results of previous assessment activities, including tank closure and site assessment activities, revealed the presence of near surface residual petroleum hydrocarbons in the vicinity of the former southwestern and southeastern dispenser islands and below and south of the former underground fuel storage tanks. This formal site closure request summarizes the findings of the previous assessment activities and provides sufficient risk management information to justify site closure with no further action. The justification for site closure includes data regarding the lateral and vertical extent of impacted soil, regional hydrogeologic characteristics, remedial activities conducted, physical and chemical properties of the contaminant, and qualitative evaluation of potential human and environmental risks.

BACKGROUND

Unocal Service Station 4357 is located on the southeast corner of National Boulevard and Sawtelle Boulevard (Figure 1). The site contains two 12,000-gallon underground gasoline storage tanks (USTs) northwest of the station building and one 550-gallon waste oil storage tank south of the station building. Gasoline is dispensed from four dispenser islands located north and west of the station building. A commercial retail center is located across National Boulevard to the northwest and additional commercial properties are located north, west, and south of the site. The San Diego Freeway is located immediately east of the site.

In September 1992, two 10,000-gallon gasoline USTs, one 10,000-gallon diesel UST, and one 550-gallon waste oil UST were excavated and removed from the site. The gasoline and waste oil USTs were subsequently replaced with two 12,000-gallon USTs and one 550-gallon UST, respectively. During the course of underground storage tank removal activities, soil samples were obtained from beneath the USTs, dispensers, and along product lines. Total gasoline-range petroleum hydrocarbons (TPH-G) concentrations in excess of 100 parts per million (ppm) were observed in soil samples obtained from beneath the southwestern and southeastern dispenser

Formal Site Closure Request

Unocal Station 4357, 11280 National Boulevard, Los Angeles, California

September 16, 1996

islands at depths of 2 feet below grade (fbg) and in the southeastern portion of the underground storage tank cavity at a depth of approximately 12 fbg (Montgomery Watson, 1992). Approximately 710 tons of potentially hydrocarbon affected soil was excavated and transported to the Puente Hills Landfill in Whittier, California for disposal. The vertical and lateral extent of adsorbed phase hydrocarbons was not characterized during tank, line, and dispenser replacement activities.

In March 1993, three hand auger soil borings (HB-2 through HB-4), three angle soil borings (SB-1 through SB-3), and four vertical soil borings (B-1 through B-4) were drilled to total depths ranging from 10 to 95 fbg. Soil Boring B-1 was subsequently converted to vapor monitoring well VE-1 and was completed to a total depth of approximately 90 fbg. Adsorbed phase hydrocarbons in excess of 100 ppm TPH-G were observed in soil Boring B-1 (VE-1) immediately south of the former underground storage tank location. No TPH-G concentrations in excess of 100 ppm were observed in any other soil samples obtained during site assessment activities (Montgomery Watson, 1993). The vertical and lateral extent of adsorbed phase hydrocarbons was adequately defined by this investigation.

In September 1993, a soil venting test was conducted using existing vapor well VE-1 as a test well. During the test, the applied vacuum ranged to 48 inches of water column while extraction rates ranged to 155 cubic feet per minute (cfm) (VET, 1993). Analytical results of vapor samples obtained during the course of the vapor extraction testing indicated a maximum vapor phase hydrocarbon concentration of 783 parts per million by volume (ppmv). This relatively low hydrocarbon vapor concentration suggests that either the mass of hydrocarbons potentially present in the subsurface is small or that residual petroleum hydrocarbons are not readily extractable. In addition, field monitoring data indicate an initially low oxygen concentration in subsurface air and an increase in oxygen concentrations during the course of soil vent test. This finding suggests that intrinsic biodegradation of adsorbed phase hydrocarbon had been occurring in the subsurface.

A summary site assessment diagram which includes information regarding hydrocarbon distribution, soil types encountered, and local hydrogeologic information is included in Figure 2.

GENERAL SITE CHARACTERISTICS

- In general, soil types encountered from grade to 12 to 20 fbg consisted of clay and is underlain by a clayey silt with a thickness of 5 to 10 feet (Montgomery Watson, 1993). A second clay layer was encountered between 20 and 30 fbg and varies in thickness between 3 and 10 feet. Interbeds of silty sand, clayey sand, sand, and clay were encountered to the total depth of investigation (95 fbg). Groundwater was not

Formal Site Closure Request

Unocal Station 4357, 11280 National Boulevard, Los Angeles, California

September 16, 1996

encountered during drilling activities to the maximum depth of investigation (95 fbg). Groundwater is anticipated to occur at a depth of approximately 159 fbg in the vicinity of the site (LADPW, 1988).

- The highest concentrations of TPH-G and benzene were observed in soil samples obtained from Boring B-1 (maximum TPH-G and benzene concentrations of 3,100 ppm and 0.9 ppm, respectively at depths of 20 and 40 fbg). No benzene concentrations in excess of 1 ppm were observed in any soil samples obtained during the course of UST, line, and dispenser removal activities or during the course of site assessment activities. The maximum concentration of benzene observed (1.0 ppm) was in soil sample P-4 obtained beneath the south western dispenser island at a depth of approximately 2 fbg. Benzene concentrations were either at or below laboratory detection limits in 52 of 61 total soil samples analyzed.

JUSTIFICATION FOR SITE CLOSURE

- During site assessment activities conducted in 1993, seven onsite soil borings were drilled; three hand auger borings were advanced; and one vapor monitoring well was installed.
- Near surface adsorbed phase petroleum hydrocarbons were detected in the vicinity of the southwestern and southeastern dispenser islands. Residual petroleum hydrocarbons were also detected beneath the former underground fuel tanks south of the former UST cavity.
- Excavation of residual petroleum hydrocarbons in the vicinity of the former underground fuel tanks occurred to a maximum depth of approximately 17 feet below grade during UST removal activities conducted in 1992. A total of approximately 710 tons of potentially hydrocarbon affected soil was excavated and transported to the Puente Hills Landfill in Whittier, California for disposal.
- The vertical extent of the adsorbed phase hydrocarbons in the vicinity of the former southwestern and southeastern dispenser islands is adequately defined and does not substantively extend beyond approximately 10 fbg. The vertical extent of adsorbed phase hydrocarbons south of the former underground fuel storage tanks is defined and is limited to the soil interval between 20 and 40 fbg.
- The lateral extent of hydrocarbon affected soil south of the former underground fuel storage tanks is adequately characterized to the north by Borings SB-1 and SB-2, to the west by Boring SB-3, and to the south by Borings B-3 and B-4.

Formal Site Closure Request

Unocal Station 4357, 11280 National Boulevard, Los Angeles, California

September 16, 1996

- Residual petroleum hydrocarbons are characterized as weathered. The weathered characteristics are evident by the relatively low concentrations of aromatic hydrocarbons (i.e., benzene, toluene, ethylbenzene, and xylenes) (Tables 1 and 2). Chromatograms from soil samples B-1 (VE-1) at depths of 20 and 40 fbg are compared to chromatograms for a gasoline standard in Figure 3.
- The residual hydrocarbons detected in soil samples obtained across the site are characteristic of "weathered" gasoline (Figure 3). This weathered gasoline is less subject to fate processes such as volatilization, dissolution, and migration and does not pose a significant risk to human health or groundwater beneath the site.
- All potential sources of a petroleum hydrocarbon release (i.e., underground fuel storage tanks, product lines, and product dispensers) have been removed and upgraded.
- Given the limited vertical extent of hydrocarbon-affected soil, the significant depth to groundwater (~ 159 fbg), the absence of viable human exposure pathways, the physical characteristics of the residual hydrocarbons (i.e., low aromatic content), and the elimination of the presumed source of the hydrocarbon release (i.e., underground storage tanks, dispensers, and product lines), residual petroleum hydrocarbons as defined during previous site assessment activities, do not pose a threat to human health or to groundwater beneath the site.

RECOMMENDATIONS

- Based on the factors described above, formal site closure is requested. Upon receipt of site closure acknowledgement, existing Vapor Well VE-1 will be abandoned in accordance with applicable standards and regulations and a well abandonment report will be prepared and submitted to the Los Angeles City Fire Department.

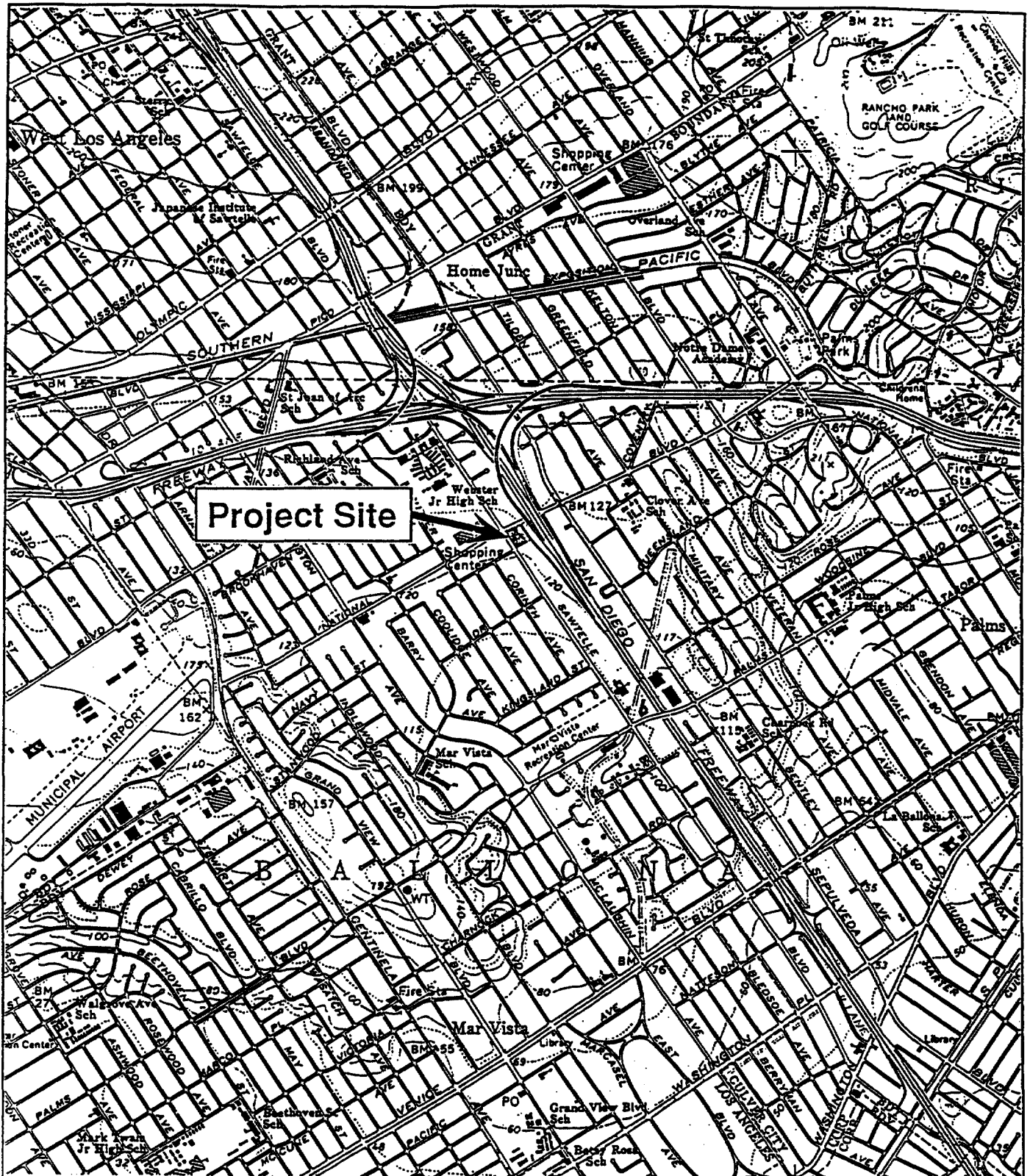
Formal Site Closure Request

Unocal Station 4357, 11280 National Boulevard, Los Angeles, California
September 16, 1996

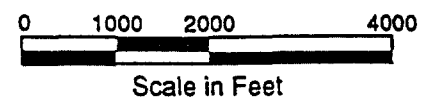
REFERENCES

- Montgomery Watson, 1992. Closure Report, Underground Storage Tank, Unocal Service Station #4357, 11280 National Boulevard, Los Angeles, California. December.
- Montgomery Watson, 1993. Phase II Subsurface Environmental Investigation Report for Station 4357, 11280 National Boulevard, Los Angeles, California. April 3.
- Montgomery Watson, 1994. Remedial Action Plan for Station 4357, 11280 National Boulevard, Los Angeles, California. June.
- VET, 1993. Vapor Extraction Technology. Vapor Extraction Feasibility Test Report, Unocal Station 4357, 11280 National Boulevard, Los Angeles, California. October 25.

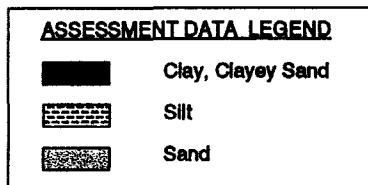
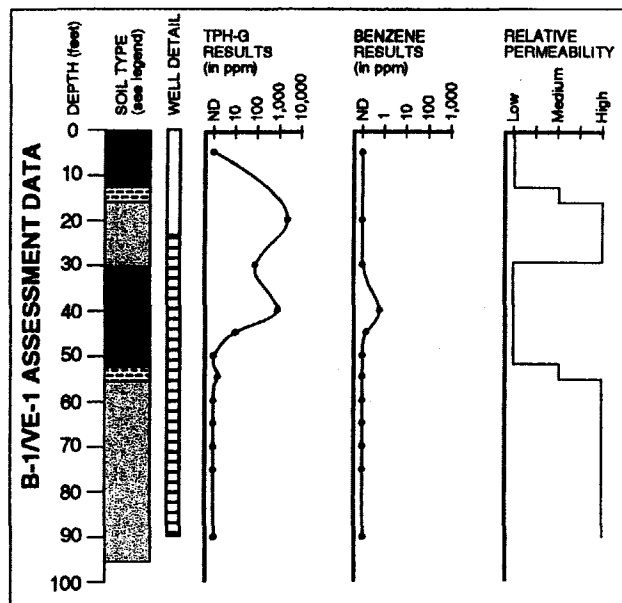
FIGURES



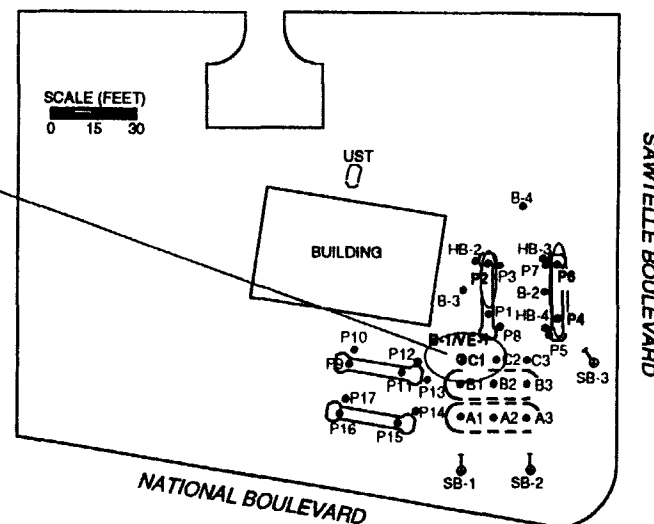
Source: 7.5 Minute Topographic Quadrangle Map
Beverly Hills, California, Dated 1966



Site Location Map
Figure 1



SITE PLAN



SITE PLAN LEGEND

- P-6 ● Soil Sample Location
- B-1/VE-1 ○ Vadose Monitoring Well
- SB-3 ⊕ Angled Boring
- Lateral Extent of Hydrocarbon-Affected Soil (>100 ppm)

GENERAL NOTES:

Depth is in feet below grade. fbg = feet below grade.
 TPH-G = total petroleum hydrocarbons with gasoline distinction.
 ppm = parts per million.
 ND = not detected at laboratory detection limit (10 ppm for TPH-G; 0.003 ppm for benzene).
 UST = underground storage tank.

Green Well/Boring Symbol = Wells/borings with no concentrations of TPH-G greater than 100 ppm or Benzene greater than 1.0 ppm.

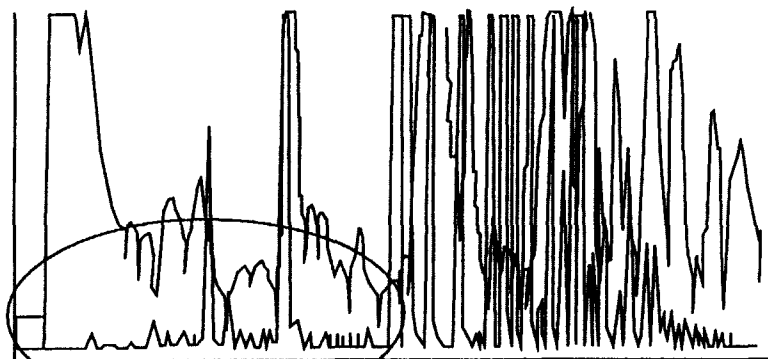
KEY DATA:

- 1) Hydrocarbon-affected soil was first encountered during tank excavation activities conducted in 1991. Hydrocarbon-affected soil was detected in southern portion of the tank cavity (maximum 3,300 ppm TPH-G at 12 fbg).
- 2) Groundwater was not encountered during site assessment activities to the maximum depth of investigation (95 fbg).
- 3) First groundwater is estimated to occur at approximately 159 fbg (LACDPW, 1994).
- 4) The nearest municipal well to the site is #2578J, located approximately 0.75 mile south. Recorded groundwater level was 158.7 fbg in December 1985 (Los Angeles County Department of Public Works).
- 5) Refer to Tables 1 and 2 for the results of soil samples collected during tank excavation and site assessment activities

ASSESSMENT SUMMARY DIAGRAM

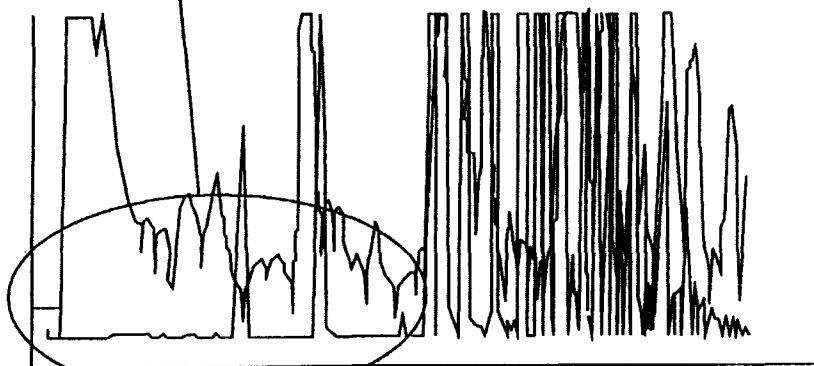
Unocal Station 4357
 11280 National Boulevard
 Los Angeles, California

FIGURE 2





B-1/VE-1 @ 40'

EVIDENCE OF WEATHERED GASOLINE,
LIGHT FRACTIONS ARE ABSENT OR REDUCED



B-1/VE-1 @ 20'

LEGEND

-  Standard Chromatogram Pattern
-  Soil Sample Chromatogram Pattern

NOTES:

ftg = feet below grade.
Chromatograms created January 26, 1993.

RELATIVE COMPARISON OF HYDROCARBONS IN SOIL TO A GASOLINE STANDARD

Unocal Station 4357
11280 National Boulevard
Los Angeles, California

TABLES

TABLE 1

SUMMARY OF SUBSURFACE TANK REMOVAL SOIL SAMPLE ANALYTICAL RESULTS (mg/kg)
9/22/92

LOG #	Depth (ft)	TPH ¹	Benzene	Toluene	Ethyl	Xylenes ² Benzene	Comments
A-1	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
A-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
A-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- diesel tank
B-1	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
B-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
B-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
C-1	12	3300	ND<0.5	24	79	580	Bottom sample- gasoline tank
C-2	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
C-3	12	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Bottom sample- gasoline tank
P-1	2	ND<10	ND<0.005	ND<0.005	ND<0.005	0.042	Pump island sample
P-2	2	170	0.55	1.3	1.7	1.3	Pump island sample
P-3	2	ND<10	0.014	0.025	0.047	0.33	Product piping sample
P-4	2	280	1.0	4.7	4.8	32	Pump island sample
P-5	2	ND<20	ND<0.010	ND<0.010	ND<0.010	0.066	Product piping sample
P-6	2	380	0.8	10	5.5	50	Pump island sample
P-7	2	18	0.41	0.22	0.49	2.1	Product piping sample
P-8	2	ND<10	ND<0.005	ND<0.005	0.007	0.057	Product piping sample
P-9	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-10	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-11	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-12	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-13	2	17	0.005	0.005	0.031	0.13	Product piping sample
P-14	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample
P-15	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-16	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Pump island sample
P-17	2	ND<10	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Product piping sample

TABLE 1 (Continued)
SUMMARY OF SUBSURFACE TANK REMOVAL SOIL SAMPLE ANALYTICAL RESULTS (mg/kg)
9/22/92

LOG #	Depth (ft)	TPH ¹	Benzene	Toluene	Ethyl	Xylenes ² Benzene	Comments
Pile 1	NA	ND<10	ND<0.005	ND<0.005	ND<0.005	0.021	Excavated soil pile
Pile 2-1	NA	140	ND<0.025	0.026	0.075	4.3	Excavated soil pile
Pile 2-2	NA	ND<10	ND<0.005	0.005	ND<0.005	0.12	Excavated soil pile
Pile 2-3	NA	ND<20	ND<0.010	ND<0.010	ND<0.010	0.12	Excavated soil pile
Pile 3	NA	110	ND<0.05	0.11	0.15	4.8	Excavated soil pile
Pile 4-1	NA	12	ND<0.005	ND<0.005	0.016	0.25	Excavated soil pile
Pile 4-2	NA	ND<10	ND<0.005	ND<0.005	ND<0.005	0.075	Excavated soil pile
Pile 4-3	NA	ND<10	ND<0.005	ND<0.005	ND<0.005	0.031	Excavated soil pile
Lab Blank	NA	ND<10*	ND<0.005	ND<0.005	ND<0.005	ND<0.015	Lab Blank sample
WOT-N	NA	ND<10*					
WOT-S	NA	ND<10*					

NOTES:
 1 - EPA Method 8015(M).
 2 - EPA Method 8020 (BTEX).
 * - EPA Method 418.1.

TABLE 2

**LABORATORY ANALYSES OF CONFIRMATION SOIL
BORING SAMPLES (MARCH 1993)**

BORING/ DEPTH (ft)	PID (units)	TFH-G (mg/kg)	TFH-D (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Total Xylene (mg/kg)	Ethylbenzene (mg/kg)
SB-1 15	4	ND		ND	ND	ND	ND
20	2.6	ND		ND	ND	ND	ND
30	2.8	ND		ND	ND	ND	ND
40	1.1	ND		ND	ND	ND	ND
45	2.4	ND		ND	ND	ND	ND
SB-2 15	3.8	ND		ND	ND	ND	ND
20	3.8	ND		ND	ND	ND	ND
30	3.8	ND		ND	ND	ND	ND
40	3.8	ND		ND	ND	ND	ND
SB-3 15	2.6	ND		ND	ND	ND	ND
30	3	ND		ND	ND	ND	ND
40	2	ND		ND	ND	ND	ND
50	2	ND		ND	ND	ND	ND
B-1 15	35	ND		ND	0.011	0.17	0.03
20	185	3100	ND<10	ND<0.5	0.34	0.520	0.100
30	172	97		ND<0.025	0.99	16	2.5
40	152	960		0.9	70	160	31
45	40	10		0.007	0.54	1.1	0.16
50	22	ND		ND	0.051	0.091	0.009
55	15.2	1.8		ND	0.056	0.069	0.013
60	24	ND		ND	0.031	0.063	0.009
65	32	ND		ND	ND	ND	ND
70	5	ND		ND	0.006	0.035	ND
75	18	ND		ND	0.005	0.03	0.005
90	18	ND		ND	ND	0.019	ND
B-2 15	172	8		0.047	0.019	0.052	0.016
20	152	ND	ND<10	0.19	0.006	0.087	ND
B-3 10	1	ND		ND	ND	ND	ND
20	1	ND		ND	ND	ND	ND
30	0	ND		ND	ND	ND	ND
40	1	ND		ND	ND	ND	ND
B-4 20	0	ND		ND	ND	ND	ND
HB-2 10	1.5	23		ND	ND	0.043	0.012
HB-3 10	0	ND		ND	ND	ND	ND
HB-4 10	0	ND		ND	ND	ND	ND

NOTE:

ND indicates constituents not detected above analytical limit:

TFH-G - Gasoline - ND < 1.0 mg/kg

TFH-D - Diesel - ND < 10 mg/kg

Benzene - ND < 0.005 mg/kg

Toluene - ND < 0.005 mg/kg

Ethylbenzene - ND < 0.005 mg/kg

Xylenes - ND < 0.015 mg/kg

Shaded area means results above the detection limits.

Blank space means not analyzed.

STATE OF CALIFORNIA

REGIONAL WATER QUALITY CONTROL BOARD
 DEPARTMENT OF HEALTH SERVICES
 SOLID WASTE MANAGEMENT BOARD
 DEPARTMENT OF FORESTRY

APPLICATION FOR FACILITY PERMIT/WASTE DISCHARGE

This form is to be used for filing a/an: (check all appropriate)

1. ☒ **REPORT OF WASTE DISCHARGE**
(Pursuant to Division 7 of the State Water Code)
2. ☐ **APPLICATION FOR A HAZARDOUS WASTE FACILITY PERMIT**
(Pursuant to Health and Safety Code Section 25200)
3. ☐ **APPLICATION FOR A SOLID WASTE FACILITIES PERMIT**
(Pursuant to Government Code Section 65760.30)
4. ☐ **APPLICATION FOR A RUBBISH DUMP PERMIT**
(Pursuant to Public Resources Code Sections 4371-4375 and 4438)

FOR OFFICE USE ONLY

Form 200 Rec'd _____
 Fee (RWQCB) _____ (SWMB) _____
 Letter to Discharger _____
 Report Rec'd _____
 Effective Date _____
 CDF Notified _____
 DOHS No. _____
 SWMB No. _____

NAME OF FACILITY UNOCAL CORPORATION SS# 4357		I. FACILITY	
ADDRESS 11280 NATIONAL BLVD., CULVER CITY, CA		TELEPHONE # () ()	CIP CODE
NAME OF LEGAL OWNER OF FACILITY UNOCAL PETROLEUM PRODUCTS AND CHEMICAL		TELEPHONE # (213) 977-675	CIP CODE
ADDRESS CENTRAL PURCHASING, STE 414, P.O. BOX 7600, LOS ANGELES, CA 9005		DIVISION	CIP CODE
NAME OF BUSINESS OPERATING FACILITY UNOCAL CORPORATION SS# 4357		TELEPHONE # () ()	CIP CODE
ADDRESS 11280 NATIONAL BLVD., CULVER CITY, CA			CIP CODE
TYPE OF BUSINESS OPERATING FACILITY <input type="checkbox"/> Partnership <input type="checkbox"/> Person <input checked="" type="checkbox"/> Corporation <input type="checkbox"/> Government Agency			
NAME OF BUSINESS OPERATING FACILITY UNOCAL PETR OIL PRODUCTS & CHEMICAL DIVISION		TELEPHONE # (213) 977-6757	CIP CODE
ADDRESS CENTRAL PURCHASING, STE. 414, P.O. BOX 7600, LOS ANGELES, CA 9005			CIP CODE

II. REASON FOR FILING

A. <input checked="" type="checkbox"/> New discharge or facility	D. <input type="checkbox"/> Change in character of discharge	G. <input type="checkbox"/> Change in business operating facility
B. <input type="checkbox"/> Existing discharge or facility	E. <input type="checkbox"/> Change in place or method of disposal	H. <input type="checkbox"/> Enlargement of existing facility
C. <input type="checkbox"/> Increase in quantity of discharge	F. <input type="checkbox"/> Change in design or operation	I. <input type="checkbox"/> Other (explain below)

III. TYPE OF OPERATION

A. <input type="checkbox"/> Transfer station	D. <input type="checkbox"/> Sewage treatment	G. <input type="checkbox"/> Woodwaste site
B. <input type="checkbox"/> Solid waste disposal site	E. <input type="checkbox"/> Industry (on-site disposal facility)	H. <input checked="" type="checkbox"/> Other (explain below)
C. <input type="checkbox"/> Hazardous waste disposal site	F. <input type="checkbox"/> Industry (discharge to sewer)	

UST REMOVAL

IV. TYPE OF WASTE

A. <input type="checkbox"/> Sludge, sewage sludge, and/or capric tank pumpings	E. <input type="checkbox"/> Agricultural wastes	I. <input type="checkbox"/> Inert materials
B. <input type="checkbox"/> Industrial wastes	F. <input type="checkbox"/> Animal wastes	J. <input type="checkbox"/> Dead animals
C. <input type="checkbox"/> Municipal solid wastes	G. <input type="checkbox"/> Forest product wastes	K. <input type="checkbox"/> Tires
D. <input type="checkbox"/> Hazardous wastes	H. <input type="checkbox"/> Construction/demolition wastes	L. <input checked="" type="checkbox"/> Other (explain below)

NON HAZARDOUS SOIL

V. SITE DESIGN CAPACITY

A. MAXIMUM POPULATION OR CAPACITY N/A	B. DESIGN POPULATION OR ULTIMATE CAPACITY N/A	C. LIFE EXPECTANCY (YEARS) N/A
---	---	--

A. PRESENT OR PROPOSED DAILY FLOW (IN MGD):		VI. QUANTITY OF WASTES		B. DESIGN FLOW (IN MGD)	
N/A		AVERAGE		N/A	
B. SOLID WASTE DISPOSAL SITE (IN TONS OR CUBIC YARDS):		DAILY QUANTITY		C. AREA IN WHICH SOIL WILL BE DISTURBED (IN ACRES)	
		TOTAL IN PLACE QUANTITY		TOTAL MTD AREA	
		500 yd ³		N/A	
VII. LOCATION OF POINT OF DISPOSAL OR OPERATION					
DESIGN AND ATTACH MAP, SKETCH, OR LOCATION ON U.S.G.S. QUADRANGLE MAP, 7.5 OR 15 MINUTE SERIES, AT DISTANCES OR BEARING AND DISTANCE FROM SECTION CORNER OR QUARTER CORNER, SECTION, TOWNSHIP, RANGE, BASE AND MERIDIAN:					
DISPOSAL AT PUENTE HILLS LANDFILL, WHITTIER					

VIII. SOURCE OF WATER SUPPLY (CHECK ALL APPROPRIATE)	
<input type="checkbox"/> MUNICIPAL OR UTILITY SERVICE:	<input type="checkbox"/> INDIVIDUAL (WELL)
N/A	N/A
<input type="checkbox"/> SURFACE SUPPLY:	<input type="checkbox"/> Appropriation
N/A	
IX. ENVIRONMENTAL IMPACT REPORT (EIR)	
Has an EIR been prepared for this project?	
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
If "Yes", please enclose a copy.	
If "No", will an EIR be prepared?	
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Will a negative declaration be prepared?	
<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Who will prepare the negative declaration?	
APPROX. DATE OF COMPLETION	

CERTIFICATION

I, J. A. Adams, certify under penalty of perjury that the information provided in this application and in any attachment is true and accurate to the best of my knowledge.

SUBSCRIBER'S SIGNATURE		SIGNATURE OF CREATOR OF FACILITY	
<u>J. A. Adams</u>		<u>J. A. Adams</u>	
PRINTED OR TYPED NAME		PRINTED OR TYPED NAME	
J. A. ADAMS		J. A. ADAMS	
TITLE		TITLE	
SR. ENV. GEOLOGIST		SR. ENV. GEOLOGIST	
DATE		DATE	
10/12/92		10/12/92	
TITLE OF ANY ATTACHMENTS:			

You will be notified of the correctness of filing fee and submission of any additional information deemed necessary to complete your Report of Waste Discharges pursuant to Division 7, Section 13260 of the State Water Code, or to complete your permit application pursuant to Government Code Section 88700.30 and Health and Safety Code Section 25200.

CITY OF LOS ANGELES

CALIFORNIA



TOM BRADLEY
MAYOR

BOARD OF
FIRE COMMISSIONERS
485-6032

CARL R. TERZIAN
PRESIDENT

KENNETH S. WASHINGTON
VICE-PRESIDENT

AILEEN ADAMS

JAMES E. BLANCARTE

NICHOLAS H. STONNINGTON

EVA WHITELOCK
EXECUTIVE ASSISTANT

DEPARTMENT OF FIRE

200 NORTH MAIN STREET
LOS ANGELES, CA 90012

DONALD O. MANNING
CHIEF ENGINEER
AND
GENERAL MANAGER

January 20, 1993

Mr. Jim Adams
Unocal Corporation
911 Wilshire Boulevard, Suite 1010
Los Angeles, CA 90017

Attention: Mr. Adams:

Unocal Service Station Number 4357
11280 National Boulevard
Los Angeles, California

The Fire Department has reviewed the Closure Report dated December 1992, as submitted by James M. Montgomery Consulting Engineers Incorporated.

Based on the information provided, contamination above this Department's action level exists at this site. Enclosed is a Life Safety Violation Notice Number 53745 to provide a site assessment.

If you require additional information from the Los Angeles City Fire Department, contact Inspector Henry J. Amparan, of the Underground Tank Plan Check Unit, at (213) 485-7543.

Very truly yours,

DONALD O. MANNING
Chief Engineer and General Manager

Richard Camarena
Richard Camarena, Captain I
Commander, Underground Tank Plan Check Unit

RC:HJA:1a:5589w

Enclosure

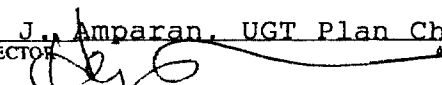
cc: James M. Montgomery Consulting
Engineers Incorporated
301 North Lake Avenue, Suite 600
Pasadena, California 91101

Attention: Mr. Najid Rasouli

AN EQUAL EMPLOYMENT OPPORTUNITY - AFFIRMATIVE ACTION EMPLOYER

City of Los Angeles
DEPARTMENT OF FIRE
FIRE/LIFE SAFETY VIOLATION

Nº 53745

OCCUPANCY	DISTRICT	BLOCK NO.	MAP BOOK	PAGE	PARCEL	DATE
						January 20, 1993
TO: (Name) Mr. Jim Adams (Title)			FIRM OR D.B.A. Unocal Corporation			
ADDRESS: (Street) 911 Wilshire Boulevard, (City) Los Angeles, (State) CA (Zip Code) 90017						PHONE ()
ADDRESS OF VIOLATION: (Street) 11280 National Boulevard (City) Los Angeles (State) California (Zip Code) 90034						
COMPLY WITH REQUIREMENTS AS NOTED						
<input checked="" type="checkbox"/> Provide a Site Assessment performed by a Professional Geologist, Civil Engineer, or an Engineering Geologist who is registered or certified by the State of California and who is experienced in the use of the Unified Soil Classification System. (57.31.38)						
This report shall include but not be limited to the vertical and horizontal extent of contamination using Methods 8015 Modified for Total Petroleum Hydrocarbon, 8020 for BTXE, 7420 for Total Lead, 418.1 for total recoverable petroleum hydrocarbons, location of groundwater using an authoritative source, clean-up recommendations and any other information that may be required by the Chief. Please submit all reports in triplicate to the:						
Bureau of Fire Prevention and Public Safety Underground Tank Plan Check Unit 200 North Main Street, Room 930, City Hall East Los Angeles, California 90012						
<input type="checkbox"/> Secure the area from unauthorized entry. (57.31.50)						
<input type="checkbox"/> No site remediation shall occur until the Fire Department has received and approved a written plan of remediation.						
ADDITIONAL INFORMATION ON <input type="checkbox"/> BACK OF THIS FORM <input type="checkbox"/> ATTACHED SHEET(S)						
FAILURE ON YOUR PART TO COMPLY WITH THIS NOTICE ON OR BEFORE <u>April 20, 1993</u> WILL SUBJECT YOU TO PENALTIES PRESCRIBED BY SAID ORDINANCE. A REINSPECTION OF THE PREMISES SHALL BE MADE FOR FULL COMPLIANCE.						
RECEIVED BY _____ TITLE _____						
FOR ADDITIONAL INFORMATION PHONE: (213) 485-7543		DATE COMPLETED INSPECTOR		BY ORDER OF THE CHIEF ENGINEER AND GENERAL MANAGER BY <u>Henry J. Amparan</u> UGT Plan Check Unit INSPECTOR SIGNATURE 		

Unocal Corporation
376 South Valencia Avenue
Brea, California 92621
Telephone (714) 528-7201

UNOCAL 76

May 24, 1993

Southern Region
Corporate Environmental
Remediation and Technology

Captain Camarena
L.A. Fire Dept.
Fire Prevention Bureau/ UST Plan
Check Unit
200 N. Main St., Rm 920
City Hall East
Los Angeles, Ca. 90012

RE: Phase II Assessment Report
SS# 4357
11280 National Blvd./Sawtelle
Los Angeles, CA.


Dear Captain Camarena,

Enclosed please find one copy of the April 1993 Phase II Subsurface Investigation Report, for the above referenced service station. Unocal completed this further assessment to determine the vertical and lateral extent of the soil contamination discovered during the "Soil Reprojection" project performed last fall.

Presently, Unocal is planning to evaluate remedial alternatives to lower the soil contamination to levels which will not threaten ground water below the site. When our evaluation has been completed, Unocal will submit our action plan for this site.

If you have any questions regarding this correspondence, please feel free to call me at (714)-577-1846.

Very truly yours,


Jim Adams
Sr. Geologist

c. Majid Rasouli-Montgomery Watson
Greg Shaeffer-T.M.-Van Nuys-with two reports

CITY OF LOS ANGELES
CALIFORNIA

BOARD OF
FIRE COMMISSIONERS
485-6032

CARL R. TERZIAN
PRESIDENT
KENNETH S. WASHINGTON
VICE-PRESIDENT
AILEEN ADAMS
JAMES E. BLANCARTE
NICHOLAS H. STONNINGTON

EVA WHITELOCK
EXECUTIVE ASSISTANT



TOM BRADLEY
MAYOR

DEPARTMENT OF FIRE
200 NORTH MAIN STREET
LOS ANGELES, CA 90012

DONALD O. MANNING
CHIEF ENGINEER
AND
GENERAL MANAGER

June 21, 1993

Mr. Jim Adams
376 South Valencia Avenue
Brea, CA 92621

Dear Mr. Adams:

Unocal Service Station 4357
11280 National Boulevard
Los Angeles, California

The Fire Department has reviewed the Phase II Assessment Report dated April 1993, as submitted by Montgomery Watson.


Based on the information provided, this Department has determined we can consider closure of this site the following items are required:

1. Provide a Remedial Action Plan.
2. A timetable for the Phase II.
3. Upon completion provide a final report.

If you require additional information, contact Inspector Henry J. Amparan, of the Underground Tank Plan Check Unit, at (213) 485-7543.

Very truly yours,

DONALD O. MANNING
Chief Engineer and General Manager


Jim N. Digrao, Captain I
Commander, Underground Tank Plan Check Unit

JND:HJA:la:6120w

CITY OF LOS ANGELES
CALIFORNIA

BOARD OF
FIRE COMMISSIONERS
485-6032

CARL R. TERZIAN
PRESIDENT

KENNETH S. WASHINGTON
VICE-PRESIDENT

AILEEN ADAMS

JAMES E. BLANCARTE

NICHOLAS H. STONNINGTON

EVA WHITELOCK
EXECUTIVE ASSISTANT



Richard J. Riordan
MAYOR

DEPARTMENT OF FIRE
200 NORTH MAIN STREET
LOS ANGELES, CA 90012

DONALD O. MANNING
CHIEF ENGINEER
AND
GENERAL MANAGER

August 18, 1993

Mr. Majid Rasouli
Montgomery Watson
301 North Lake Avenue, Suite 600
Pasadena, CA 91101

Dear Mr. Rasouli:

Unocal Service Station Number 4357
11280 National Boulevard
Los Angeles, California

The Fire Department has reviewed the Quarterly Report dated June 29, 1993, submitted by Montgomery Watson.

Quarterly Reports are required during remediation of the site and a "Closure Report" is required upon completion of the remediation work.

If you require additional information from the Los Angeles City Fire Department, contact Inspector Jesse J. Franco, of the Underground Tank Plan Check Unit, at (213) 485-7543.

Very truly yours,

DONALD O. MANNING
Chief Engineer and General Manager

A handwritten signature in cursive script, appearing to read "Jim N. Digrado".

Jim N. Digrado, Captain I
Commander, Underground Tank Plan Check Unit

JND:JJF:1a:6344w

cc: Unocal Corporation

Unocal Corporation
376 South Valencia Avenue
Brea, California 92621
Telephone (714) 528-7201



Southern Region
Corporate Environmental
Remediation and Technology

July 12, 1994

Inspector Amparan
L.A. Fire Dept.
Fire Prevention Bureau/ UST Plan
Check Unit
200 N. Main St., Rm 920
City Hall East
Los Angeles, Ca. 90012

SERVICE STATION LS# 4357
1280 NATIONAL BLVD./SAWTELLE
LOS ANGELES, CA.
Remedial Action Plan

Dear Inspector Amparan:

Enclosed please find one copy of the June 1994 Remedial Action Plan Report, for the above referenced service station.

If you have any questions regarding this correspondence, please feel free to call me at (714)-577-1846.

Best regards,

J. A. Adams
Senior Geologist

JAA/jaa

Enclosure

xc. Rich Gossett
Greg Shaeffer-T.M.-Van Nuys-with one report

CITY OF LOS ANGELES
CALIFORNIA



RICHARD J. RIORDAN
MAYOR

**BOARD OF
FIRE COMMISSIONERS**
485-6032

ELIZABETH H. LOWE
PRESIDENT
DAVID W. FLEMING
VICE-PRESIDENT
LARRY GONZALEZ
MICHELLE EUNJOO PARK-
STEEL
LESLIE SONG WINNER
LYNNE NELSON
EXECUTIVE ASSISTANT

DEPARTMENT OF FIRE
200 NORTH MAIN STREET
LOS ANGELES, CA 90012

DONALD O. MANNING
CHIEF ENGINEER
AND
GENERAL MANAGER

AUG 03

ENV. REMEDIATION

July 28, 1994

J. A. Adams, Senior Geologist
Unocal Corporation
376 South Valencia Avenue
Brea, CA 92621

Dear Mr. Adams:

Unocal Service Station Number 4357
11280 National Boulevard
Los Angeles, California

The Fire Department has reviewed the Remedial Action Plan dated June 1, 1994, as submitted by Montgomery Watson.

Based on the information provided, this Department concurs with your site remediation recommendation. Prior to initiating any remediation of the site you are required to comply with the following:

1. Obtain permits from the Los Angeles City Fire Department's Engineering Unit at (213) 485-5977, to install the vapor extraction unit.
2. Quarterly Reports are required showing the progress of the clean up.
3. At the completion of your remedial action, a Closure Report must be provided which demonstrates that the site is clean.

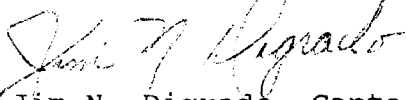


J. A. Adams, Senior Geologist
July 28, 1994
Page 2

If you require additional information, contact Inspector Christopher A. Cooper of the Underground Tank Plan Check Unit, at (213) 485-7543.

Very truly yours,

DONALD O. MANNING
Chief Engineer and General Manager



Jim N. Digrado, Captain I
Commander, Underground Tank Plan Check Unit

JND:CAC:kz:ugt375

cc: Mr. Jim A. Adams, Montgomery Watson

STATE WATER RESOURCES CONTROL BOARD

DIVISION OF CLEAN WATER PROGRAMS

2014 T STREET, SUITE 130

P.O. BOX 944212

SACRAMENTO, CALIFORNIA 94244-2120

(916)227-4307

(916)227-4530 (FAX)

RECEIVED

FEB 08 1996

ENV. REMEDIATION/SQ.



February 2, 1996

MARGARET SRINIVASAN
UNOCAL CORPORATION
376 SOUTH VALENCIA AVENUE, ROOM F-107
BREA, CA 92621

UNDERGROUND STORAGE TANK CLEANUP FUND, PROGRAM MANAGER DECISION TO REJECT CLAIMS:

CLAIM #	STATION #	SITE ADDRESS
007519	1886 - KEW	5600 MELROSE AVE, LOS ANGELES
007521	7196 - MMS	3101 W EL SEGUNDO BLVD, HAWTHORNE
007532	2121 - DLC	26393 S VERMONT BLVD, HARBOR CITY
009280	4357 - JAA	11280 NATIONAL BLVD, LOS ANGELES
009288	5405 - MAB	2215 S VERMONT AVE, LOS ANGELES
009292	1883 - JAA	4725 EAST SECOND STREET, LONG BEACH
009302	1650 - MMS	7161 SEPULVEDA BLVD, VAN NUYS

I have received your request for Program Manager Decisions for the claims listed above. After review of the requests and supporting documentation, I have decided to uphold the Staff Decisions to reject these claims based on the following reason:

Section 2811 (a)(2) of the Underground Storage Tank Cleanup Fund Regulations states in part that claimants must have obtained or applied for a permit to operate underground storage tanks by January 1, 1990. The documentation you submitted included UST installation permits, UST removal permits, Air Pollution Control permits, and UST permits to operate dated after January 1, 1990. All of these permits are unacceptable for eligibility for the Fund.

If you disagree with this Program Manager Decision, you may request a Final Division Decision from the Chief of the Division. A request should be sent to:

Harry Schueller, Chief
UST Cleanup Fund Program
SWRCB/DWCP
P. O. BOX 944212
Sacramento, CA 94244-2120

A request to the Chief of the Division must include, at a minimum: (1) a statement describing how the claimant is damaged by the prior Program Manager Decision; (2) a description of the remedy or outcome desired; and (3) an explanation of why the claimant believes the action or the Program Manager Decision is erroneous, inappropriate or improper.

If you do not request a Final Division decision from the Chief of the Division within sixty (60) calendar days from the date of this letter, the Program Manager Decision will then become final and conclusive.

If you have any questions, please call Barbara Andersen at (916) 227-4417.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dave Deaner', with a long horizontal flourish extending to the right.

Dave Deaner, Program Manager
Underground Storage Tank Cleanup Fund

4357

Unocal Corporation
Diversified Businesses
376 South Valencia Avenue
Brea, California 92621
Telephone (714) 577-1845



Via Hand Delivery

September 16, 1996

Richard C. Gossett
Southern Region
Manager, Remediation Projects
Corporate Environmental
Remediation and Technology

City of Los Angeles
Department of Fire
200 N. Main Street
Los Angeles, CA 90012

Attn: Jesus S. Pasos, Captain II

**FORMAL SITE CLOSURE REQUESTS
VARIOUS SITES**

Dear Mr. Pasos:

Transmitted herewith are copies of Unocal's **FORMAL SITE CLOSURE REQUESTS**, dated September 15, 1996 as prepared by Alton Geoscience for the following sites:

Service Station 0898, Los Angeles
Service Station 2439, Los Angeles
Service Station 2446, Harbor City
Service Station 3489, Tarzana
Service Station 4061, San Pedro
Service Station 4357, Los Angeles
Service Station 4595, Tujunga
Service Station 5510, Granada Hills

This submittal represents the culmination of a complete project history file review and analyses undertaken by Unocal. In an effort to facilitate risk management decision making, the enclosed documents contain summary information regarding the findings of previous site assessment and remediation activities conducted to date. In addition, site specific justifications for site closure with no further action are provided.

Upon completion of your review please provide this office with your comments an/or recommendations regarding these closure request documents. Please forward all no further action letter regarding these sites to my attention.

Mr. Jesus Pasos
Formal Site Closure Requests

September 16, 1996
page 2

If you have any questions please do not hesitate to call Mr. Todd Stanford, Alton Geoscience, (714) 753-0101, or myself, (714) 577-1845.

Thank you in advance for your cooperation.

Very truly yours,

Richard C. Gossett

LACFD.DOC
RCG/DJB/wpb
enclosures

J. A. Adams
D. J. Bourgault
M. A. Bryan
Todd Stanford, Alton Geoscience